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Genus GANDACA.

Terias (part), Horsfield; Boisduval; Doubleday; Butler.
Euremia (pt.), Staudinger & Schatz, Exot. Schmett. II. p. 28 (1892).
Terias (group D), Watson, Journ. Bombay N. H. Soc. 1894, pp. 509, 516.
Terias (sect. a), Semper, Reise Phil. Lep. p. 252 (1891).
Terias (sect. I., pt.), Butler, Ann. N. H. 1898, pp. 57, 59.

Forewing broader, shorter, and more triangular than in typical *Terias* (Hecabe), the exterior margin erect and the apex more obtuse; median vein of male *not* bordered with dark coloured secondary sexual brands. *Hindwing* also broader and more triangularly oval than in *Terias*, the exterior margin also not being medially somewhat produced—as is quite apparent in both sexes of *T. Hecabe*.

Male. *Forewing* beneath, with an ordinary elongated subbasal patch of glossy-white appressed scales extending from above submedian vein, and below it to basal end of posterior margin. *Hindwing* above, with the costal border clothed with glossy-white appressed scales.

TYPE.—G. Harina.

HABITS.—"This is a true forest butterfly, where it is found, in Sumatra, somewhat rarely, frequenting flowers, together with species of *Zemeros* and females of Lycænidæ. It is found throughout our area, with perhaps the exception of the Central Plateau, and flies throughout the year." (Dr. L. Martin, Journ. As. Soc. Bengal, 1895, 494.)

GANDACA ASSAMICA.

Plate 563, fig. 1, 1a ♂ ♀ (*Wet*), 2, 2a, b ♂ ♀ (*Dry*).

Terias Harina, Wood-Mason, J. As. Soc. Beng. 1886, p. 370. Swinhoe, Trans. Ent. Soc. 1893, p. 307. Elwes, *id.* l.c. 1888, p. 414. de Nicéville, Sikkim Gazetteer, 1894, p. 167. ? Taylor, List of Orissa Butt., p. 13 (1888).
Terias Harina (pt.), Butler, Ann. Nat. Hist. 1898, p. 59.

Wet-season form (fig. 1 ♂, 1a ♀). Male. Upperside pale sulphur-yellow. *Forewing* with a narrow black apical-marginal decreasing band, which terminates either before or beneath the lower median veinlet, its inner-edge being more or less very slightly sinuated. Underside. Both wings uniformly pale sulphur-yellow.

Female. Upperside white. *Forewing* with the apical marginal black band broader than in male, and its inner-edge distinctly angled at the fifth subcostal branch. Underside very faintly tinted with pale sulphur-yellow.

Expanse, ♂, 2 to $2\frac{2}{10}$ ♀ 2 inches.

Dry-season form (fig. 2 ♂, 2a, b ♀). Male. Upperside. *Forewing* with the marginal band somewhat more even on its inner-edge. Female. Upperside. *Forewing* with the marginal band similar to male, but somewhat narrower, or conspicuously narrower.

Expanse, ♂ 1¾, ♀ 1½ to 1¾ inch.

HABITAT.—Assam; Lower Sikkim; ? Lower Bengal.

DISTRIBUTION.—"Mr. J. Wood-Mason obtained one male at Dhurmkal in May, and another at Irangmara, Cachar, in August" (J. A. S. Beng. 1886, 370). Colonel C. Swinhoe records it as being "common in the Khasia Hills" (Tr. Ent. Soc. 1893, 307). Colonel C. T. Bingham possesses specimens from Cherra Pungi, taken in October. In the British Museum are examples from Shillong, Silhet, and Sikkim. Mr. H. J. Elwes records it as being "rare in Sikkim, at low elevations, up to about 4,000 feet elevation, from April to December" (Tr. Ent. Soc. 1888, 414).

NOTE.—Mr. W. C. Taylor, in his "List of butterflies taken at Khorda, in Orissa, Lower Bengal," there records *T. Harina* as an "uncommon butterfly."

GANDACA BURMANA.

Plate 563, fig. 3, 3a, b, c, ♂ ♀.

Terias Harina, Watson, Journ. Bombay N. H. Soc., 1888, p. 25; *id. l.c.* 1891, p. 51; 1897, p. 669. Adamson, List Burmese Butt. p. 42 (1897). ? Fruhstorfer, D. E. Z., 1902, p. 301.

Terias Harina (pt.), Butler, Ann. Nat. Hist. 1898, p. 59.

Terias formosa, Moore, P.Z.S., 1878, p. 836; *id.* J. Linn. Soc. Zool. 1886, p. 45. Elwes, J. As. Soc. Beng. 1887, p. 431.

Wet-season form (fig. 3, ♂, 3a ♀). Male. Upperside pale sulphur-yellow. *Forewing* with the black marginal band much broader throughout its length than in the Khasia and Sikkim form, its inner-edge also comparatively more even. *Hindwing* with, or without, a few minute blackish scales medially disposed along the outer margin. Underside pale sulphur-yellow.

Female. Upperside. Both wings with a distinct but faint sulphurescent tint. *Forewing* with the marginal band angled at the upper median veinlet. *Hindwing* with the outer margin medially bordered by a narrow band of blackish scales. Underside pale sulphur-yellow.

Expanse, ♂ 2, ♀ 1¾ inch.

Dry-season form (fig. 3b, ♂; 3c ♀). Male. Upperside. *Forewing* with the black outer band somewhat narrower than in wet-form. Female. Upperside. Both wings with a fainter yellowish tint than in wet-form. *Forewing* with the outer band similar. *Hindwing* unmarked.

Expanse, ♂ 2 inches, ♀ 1¾ inch.

HABITAT.—Burma; (? Siam; Annam).

Distribution.—Col. C. H. E. Adamson found this butterfly "not uncommon in the north and west of Upper Burma, but rare in Lower Burma, where only a very few specimens were taken in November and December" (List, p. 42). There are specimens in the British Museum from Beeling, Upper Tenasserim, taken by Capt. E. Y. Watson; Malawoon, Rangoon, Tongoo; and from the Donat Range, Tenasserim, taken by Col. C. T. Bingham. Mr. O. Limborg obtained it at "Hatsiega, Upper Tenasserim" (P. Z. S., 1878, 836). Dr. L. Fea took it at Bhamo, in November. Capt. E. Y. Watson records it as "fairly common in the Upper Chindwin District during April and May" (l.c. 1897, 669).

GANDACA ANDAMANA.

Plate 563, figs. 4, 4a, b, c, ♂ ♀.

Terias formosa, Moore, Pr. Zool. Soc. 1877, p. 590 (*nec* Hübner).
Terias Harina, Wood-Mason, Journ. As. Soc. Bengal, 1880, p. 235; *id. l.c.* 1881, p. 251.
Terias Harina (pt.), Butler, Ann. Nat. Hist., 1898, p. 59.

Wet-season form (fig. 4, ♂, 4a, ♀). Male. Upperside pale sulphur-yellow. *Forewing* with a somewhat narrower outer marginal black band than in the Burmese form, its end terminating at the lower median branch. Female. Upperside white. *Forewing* with a slightly broader black outer band than in Burmese female, its lower end reaching the posterior angle. *Hindwing* with a more or less defined slender blackish-scaled marginal medial band. Underside very pale sulphur-yellow.

Expanse, ♂ 2, ♀ 1¾ to 2 inches.

Dry-season form (fig. 4b ♂, 4c ♀). Male. *Forewing* with the black outer band narrower than in *wet* form. Female. Upperside white. *Forewing* with the black outer band of similar shape and width as in *wet* form, and terminating at the posterior angle. *Hindwing* with a very few medially-disposed marginal black scales slightly perceptible.

Expanse, ♂ 1½ to 1¾, ♀ 1½ inch.

Habitat.—Andaman and Nicobar Islands.

Distribution.—This species was first obtained by Mr. F. A. de Rœpstorff, at "Port Blair, Andamans" (P. Z. S., 1878, 590).

Indo-China, Malay, and Philippine Species.—*Gandaca Annamica* (Terias Harina, Fruhstorfer, Deuts. Ent. Zeit. 1902, p. 301. *Habitat.* Annam; Siam; (? Hainan).

Gandaca Distanti (Terias Harina, Distant, Rhop. Malay., p. 307, pl. 25, fig. 13 ♂ (1885). de Nicéville, J. As. Soc. Beng., 1895, p. 494. *Habitat.* Malay Peninsula; Sumatra; Nias (? Borneo).

Gandaca Dohertyi (Terias Harina, Doherty, J. As. Beng., 1891, p. 29. Fruhstorfer, Berl. Ent. Zeit. 1904, p. 202. *Habitat.* Engano Island.

Gandaca Harina (Terias Harina, Horsfield, Catal. Lep. Mus. E. Ind. Compy., p. 137, ♂ ♀ (1829). Boisduval, Spéc. Gén. Lep. I., p. 668 (1836). Doubleday, Gen. D. Lep. p. 79 (1847). Eurema formosa, Hübner, Zutr. Exot. Schmett. figs. 979-80, ♂ (1837). *Habitat.* Java.

Gandaca Palawanica (Terias Harina, Staudinger, Lep. Pal. p. 18 (1889). *Habitat.* Palawan.

Gandaca Mindanaensis (Terias Harina, Semper, Reise Phil. Lep. p. 253 (1892). *Habitat.* Mindanao.

Gandaca auriflua (Terias auriflua, Fruhstorfer, Berl. Ent. Zeit. 1898, p. 430. *Habitat.* Sula Isles.

Genus KIBREETA.

Abæis (pt.), Hübner, Verz. bek. Schmett. p. 97 (1816).
Terias (pt.), Horsfield; Boisduval; Doubleday; Butler; Moore.
Terias (group C.), Watson, Journ. Bombay Nat. Hist. Soc. 1894, pp. 509, 515.
Terias (sect. 1, pt.), Butler, Ann. Nat. Hist. 1898, p. 57.

Male. *Forewing* subtriangular. Underside with a glossy-white rounded appressed-patch of scales extending from above the submedian vein, near its base, and below it to the extreme base of the wing. *Hindwing* obtusely oval, comparatively more produced apically than in typical *Terias.* Upperside with the costal border clothed with appressed glossy-white scales.

Type.—K. Libythea.

KIBREETA LIBYTHEA.

Plate 564, figs. 1, 1a, b, c, d, e, f, g, ♂ ♀.

Papilio Libythea, Fabricius, Ent. Syst. Suppl. p. 427 (1798).

Terias Libythea, Butler, Catal. Fabr. Butt. B.M. p. 227 (1867). Watson, Journ. Bombay N. H. Soc. 1894, p. 515. de Nicéville, J. As. Soc. Beng., 1889, p. 211; *id. l.c.* 1902, p. 26.

Terias Libythea (part), Butler, Ann. Nat. Hist., 1898, p. 58. Mackinnon, J. Bombay, N. H. S. 1898, p. 588.

Terias Drona, Moore, Lep. Ceylon, i. p. 120, pl. 46, fig. 3, 3a, ♂ ♀ (1881). Rothney, Ent. Mo. Mag. 1882, p. 35. Taylor, List Orissa Butt. p. 15 (1888). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 50, 236. Hampson, J. A. S. Beng. 1886, 361. Swinhoe, P. Z. S. 1885, p. 135; *id.* 1886, p. 430. Doherty, Journ. As. Soc. Bengal, 1886, p. 135. Davidson and Aitken, J. Bombay N. H. Soc. 1896, p. 571. de Nicéville, J. A. S. Beng. 1900, p. 252. Watson, J. Bombay N. H. S. 1890, p. 7. Ferguson, J. Bombay N. H. S. 1891, 443.

Wet-season form (fig. 1, 1a ♂, 1b ♀). Male. Upperside yellow; basal areas sparsely irrorated with greyish-black scales; cilia yellow. *Forewing* with a broad vinescent-black outer marginal band, which curves from before middle of the costa to upper median branch, below which it is sinuated, and ends broadly at the posterior angle; the veins crossing the band are generally more distinctly black-lined, and the extreme edge of the apex between the subcostals, and also their cilia, is very slightly yellow. *Hindwing* with the costal border glossy-white; a broad black continuous sinuous-edged outer marginal band. Underside paler yellow. Both wings with the tip of all the veins black scaled; cilia yellow. *Forewing* with the discocellular veinlet marked by a minute upper and lower black spot—which are connected on each side of the veinlet by a less distinct slender line; a glossy white rounded appressed patch of scales extending from above submedian vein near base, and below it to the extreme base. *Hindwing* sparsely indistinctly-irrorated with minute dusky scales; a cluster of these scales form an indistinct subapical spot, also an upper and lower oblique discal sinuous fascia, and two minute black subbasal spots between the costal and subcostal veins, one near base of cell and one between base of median and submedian vein.

Female. Upperside. Both wings duller yellow, and basally indistinctly irrorated with minute dusky scales; the marginal bands paler. *Forewing* with similar-shaped outer band. *Hindwing* with the outer band somewhat broader, its sinuous inner-edge defined by scattered scales. Underside irrorated as in the male.

Expanse ♂ ♀ $1\frac{6}{10}$ to $1\frac{8}{10}$ inch.

Intermediate form (fig. 1c, d, ♂, 1e, ♀). Male. Upperside similar to *wet* form. *Forewing* with the band slightly narrower and its inner-edge more acutely sinuated. *Hindwing* also with the band narrower. Underside also similar, the markings, except at the vein tips and discocellulars, less apparent.

Female. Upperside. *Forewing* also with the band more acutely sinuated; and the band on the *hindwing* comparatively narrower. Upperside similar to the male.

Expanse, ♂ ♀ $1\frac{4}{10}$ to $1\frac{6}{10}$ inch.

Dry-season form (fig. 1f, ♂, 1g ♀). Much smaller than *intermediate* form. Male. Upperside. Both wings with the band narrower than in the *intermediate* form. Underside with the markings slightly more distinct. Female. Upperside similar to the *intermediate* form, except that the band on the *hindwing* is less defined and somewhat macular. Underside similar to *intermediate* form.

Expanse, ♂ $1\frac{2}{10}$; ♀, 1 to $1\frac{3}{10}$ inch.

Habitat.—Western Himalayas; Western, Eastern and Southern India; Ceylon; Nicobars; ? Hongkong.

Distribution.—"This is very common in the Western Himalayas. We obtained five specimens in Masuri, and twenty-five in the Dun, of the dry-season form, typical *Libythea*, and six from Masuri, eleven from the Dun of the wet-season form, *T. Drona*" (P. W. Mackinnon, l.c. 588). Specimens in the late W. S. Atkinson's Collection were labelled "Dehra, Chamba, and Kashmir." In Mr. J. H. Leech's

Collection are males and females from "Rajaori, 4,000 feet, taken in September, and others from Kakri." Mr. W. Doherty obtained it at "Bhagheswa, Almora, and Naini Tal, from 3,000 to 6,000 feet elevation, in Kumaon" (*l.c.* 1886, 135). Col. C. Swinhoe records it from Poona, Bombay, taken in November and December," also taken at "Mhow, Central India, in September, October, and November" P. Z. S., 1885, 135, *id.* 1886, 430). Messrs. Davidson & Aitken record it as "fairly common in many parts of the Kanara District, Bombay, but does not seem to appear till the monsoon is over. The larva is not distinguishable to us from that of *T. Hecabe*, the pupa is shorter and has the snout slightly upturned. It feeds on a Leguminose plant, *Cassia pumila*" (J. Bombay N. H. S., 1896, 571). Capt. E. Y. Watson obtained it "in Mysore in October, November, and January" (J. Bomb. N. H. S., 1890, 7). Mr. G. F. Hampson records it from the Nilgiris (l.c. 1888, 361). Mr. W. C. Taylor records it as "not common at Khoorda, in Orissa" (List, p. 14). Mr. J. Rothney found it "rare in Calcutta during the rains" (Ent. Mo. Mag., 1882, 35). Mr. L. de Nicéville also records its capture in the "neighbourhood of Calcutta") J. A. S. Beng., 1885, 50). In Ceylon, it is recorded as being "found in the Hills, at 2,000 to 4,000 feet elevation, as a rule near *Patnas*, or short grass land" (Lep. Cey. 1, 120). Dr. N. Manders states that it is "common in Ceylon, in open country, between 2,000 to 5,000 feet elevation" (J. A. S. Beng. 1899, 211).

Of our illustrations on Plate 564, figs. 1, 1a, b, are from male and female *wet* form, from Simla; figs. 1c, d, e, male and female *intermediate* form, and figs. 1, f, g, male and female *Dry* form from S. India.

KIBREETA RUBELLA.

Plate 564, fig. 2, 2a, b, c, d, e, f, g, ♂ ♀.

Terias rubella, Wallace, Trans. Ent. Soc. 1867, p. 323, ♂. Moore, Proc. Zool. Soc. 1882, p. 253. de Nicéville, Journ. As. Soc. Bengal 1885, p. 50. Swinhoe, P. Z. S. 1885, p. 136; *id.* 1886, p. 430. Taylor, List of Orissa Butt. p. 14 (1888). Elwes, Tr. Ent. Soc. 1888, 413. Hampson, J. A. S. Beng. 1888, 361. Ferguson, Journ. Bombay N. H. Soc. 1891, p. 443. Watson, *id. l.c.* 1894, p. 515.

Terias Libythea (pt.), de Nicéville, Sikkim Gaz. 1894, 167. Butler, Ann. Nat. Hist. 1898, p. 58. Mackinnon, J. Bombay N. H. Soc. 1898, p. 588.

Wet-season form (fig. 2, 2a, ♂, 2b, c, ♀). Male. Upperside somewhat paler yellow than in *Libythea*. *Forewing* with the outer marginal black band similar, but blacker, and slightly narrower posteriorly; the apical edge of costa and the cilia rosy-red. *Hindwing* with the black outer band somewhat narrower, macular, the decreasing portions each with a more prolonged inner-tooth, and the yellow ground-colour between each extending to the outer edge. Underside pale yellow; markings similar to but slightly more distinct than those in *Libythea,* the forewing also having a very slightly defined subapical inwardly-oblique squamous streak. *Forewing* with the entire costal edge and outer marginal cilia, and also the outer marginal cilia of the *hindwing*, rosy-red.

Female. Upperside. Apical edge between the subcostals of *forewing*, and cilia of both wings paler rosy-red. Underside with the markings on *hindwing* slightly visible. *Forewing* above with the black outer band broken beneath the lower median veinlet. *Hindwing* with the outer band similar to male, its portions slightly broader. Underside similar to male, the markings being slightly more defined.

Expanse, ♂ $1\frac{6}{10}$, ♀ $1\frac{8}{10}$ inch.

Intermediate form (fig. 2d ♂, 2e ♀ = *rubella* types). Male. Upperside. *Forewing* with the outer band slightly narrower than in *wet* form; cilia paler red. *Hindwing* with the marginal macular band narrower, and composed of smaller portions. Underside similar to *wet* form.

Female. Upperside. *Forewing* with the outer band less broken at its posterior end than in Wet-form. *Hindwing* with the marginal macular band less distinct and narrower. Underside similar to the male.

Expanse, ♂ ♀ $1\frac{4}{10}$ inch.

Dry-season form (fig. 2f ♂, 2g ♀). Both sexes much smaller than in *intermediate* form. Cilia paler. Male. *Forewing* above with the inner-edge of the marginal band less sinuated than in *intermediate* form, its posterior end indistinctly broken. *Hindwing* with the lower portions of the macular band somewhat larger and less dentate. Underside. Both wings with less defined markings than in *intermediate* form.

Female. Upperside. *Forewing* with the band slightly broken at posterior end. *Hindwing* with the lower portions of band somewhat wider. Underside with the markings indistinct.

Expanse, ♂ ♀ $1\frac{2}{10}$ inch.

HABITAT.—Western and Eastern Himalayas; Western, Southern, and Eastern India.

DISTRIBUTION.—We possess specimens from Simla, Kasauli, and Kangra, Western Himalaya; Assighur, N.E. Bombay, taken in October; Giridih and Sahebgung, Bengal; also the type male and female, labelled "Calcutta" ex Coll. W. S. Atkinson; also a male from Sikkim, taken in April by Mr. G. C. Dudgeon; specimens from Mhow, Poona, and the Nilgiris. Col. C. Swinhoe obtained it in Bombay at "Poona October to April, Belgaum September and October, Sattara October and November, and at Mhow, Central India, in great numbers from October to April" (P. Z. S. 1885, 136; 1886, 430). Mr. G. F. Hampson obtained it in the Nilgiris. (J. A. S. Beng. 1888, 361). Mr. H. S. Ferguson took it in "Travancore Hills at 2,000 to 4,000 feet elevation" (*l.c.* p. 443). Mr. W. C. Taylor records it as "common at Khorda in Orissa, Lower Bengal" (List, p. 14). Mr. L. de Nicéville obtained it in "the neighbourhood of Calcutta" (J. A. S. Beng. 1885, 50), and records it as being "found in Sikkim only at the foot of the Hills, being rare almost throughout the year" (Sikkim Gaz. 1894, 167). Col. C. T. Bingham has specimens from Shillong, Assam. The British Museum possess a specimen taken in Bhotan by Mr. G. C. Dudgeon.

Of our illustrations on Plate 564, figs. 2, 2a, male *wet* form from Simla, and 2b, c, a female from the Nilgiris; fig. 2d, e, male and female *types*, the *intermediate* form from Calcutta; figs. 2f, g, male and female *dry* form, from Poona.

INDO-MALAYAN SPECIES.—*Kibreeta Drona* (Terias Drona, Horsfield, Catal. Lep. Mus. East India Compy., p. 137, pl. 1, fig. 13, ♂ (1829). Boisduval, Spéc. Gén. Lep. 1, p. 675 (1836). Butler, Ann. Nat. Hist. 1886, p. 214. Terias Libythea (pt.), de Nicéville, Journ. As. Soc. Bengal, 1895, p. 494. Butler, Ann. Nat. Hist. 1898, p. 58. *Habitat.* Java, Sumatra.

Kibreeta Fruhstorferi (Terias Libythea, Fruhstorfer, Deuts. Ent. Zeit. 1902, p. 301; *id.* Soc. Ent. 1903, p. 42. *Habitat.* Tonkin; Annam; Siam.

Genus NIRMULA.

Terias (part), Boisduval; Doubleday; Butler; Moore.

Terias (sect. B), Semper, Reise Phil. Lep. p. 252 (1891). Watson, Journ. Bombay N. H. Soc. 1894, pp. 509, 514.

Terias (sect. II. pt.), Butler, Ann N. H. 1898, p. 63.

Male. *Forewing* subtriangular, somewhat more pointed at the apex than in genus *Kibreeta.* Underside of *forewing* with a large subbasal oval *secondary sexual* patch of compactly-matted salmon-coloured scales, which extend below and partly above the basal portion of the median vein;* also an ordinary basal elongated appressed patch of glossy-white scales extending above and below basal portion of the submedian vein. *Hindwing* above with a similar salmon-coloured patch of matted scales in the basal interspace of the costal and subcostal vein, the costal border also being glossy-white scaled.

TYPE.—N. Venata.

NIRMULA VENATA.

Plate 565, figs. 1, 1a, b, ♂ ♀ (*Wet*); 2, 2a, b, ♂ ♀ (*Dry*).

Terias Venata, Moore, Catal. Lep. Mus. E. I. Compy., 1, p. 65, pl. 2a, fig. 2 ♂ (1857). Wallace, Trans. Ent. Soc. 1867, p. 320. Chaumette, Ent. Mo. Mag. 1865, p. 37. Swinhoe, Proc. Zool. Soc. 1885, p. 135; *id. l.c.* 1886, p. 430; *id.* J. Bombay N. H. Soc. 1887, p. 275. Doherty,

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* Not *below the submedian vein,* as stated by Watson, *l.c.* p. 509.

J. As. Soc. Beng. 1886, p. 135. de Nicéville, J. As. Soc. Beng. 1900, p. 252. Mackinnon, J. Bombay N. H. Soc. 1898, p. 588.

Terias venata (pt.), Butler, Ann. Nat. Hist. 1898, p. 64.

Terias vagans (pt.), Wallace, Proc. Zool. Soc. 1866, p. 357, ♂ (*nec* ♀).

Terias Santana, Felder, Reise Novara, Lep. p. 211 ♂ ♀ (1865).

Terias Pallitana, Moore, Ann. Nat. Hist. 1877, p. 48, ♂ ♀ (*Dry form*).

Wet form (fig. 1, 1a, b ♂ ♀). Male. Upperside pale yellow, basal areas slightly irrorated with grey-black scales. *Forewing* with a broad vinescent-black outer marginal band, which curves from middle of the costa to upper median, below which it is sinuated to lower median, its posterior end being deeply excavated to the angle. *Hindwing* with a distinctly defined black slender complete band; and a salmon-coloured patch of matted scales between the costal and subcostal vein. Underside paler yellow, unmarked, except that a very faint indication of marginal dots and a small upper discocellular streak on both wings, and a dot above the cell and discal transverse streaks on hindwing. *Forewing* with a subbasal oval patch of compactly matted salmon-coloured scales, which extend below and partly above the basal portion of the median vein.

Female. Upperside paler yellow. *Forewing* with the outer band somewhat broader. *Hindwing* with the band broader anteriorly and complete; no costal patch. Underside as in male. No subbasal patch of salmon-coloured scales.

Expanse, ♂ ♀ $1\frac{4}{10}$ to $1\frac{5}{10}$ inch.

Dry form (fig. 2, 2a, b ♂ ♀) = *Pallitana*. Male. Upperside. *Forewing* with the band similar to the Wet form, its posterior end more excavated. Underside with the ordinary markings more apparent.

Female. Upperside. *Forewing* with the posterior end of the band obsolescent. *Hindwing* with the band posteriorly narrower and more or less broken. Underside as in the male.

Expanse, ♂ $1\frac{2}{10}$ to $1\frac{4}{10}$, ♀ $1\frac{4}{10}$ inch.

HABITAT.—Western Himalayas; Western and Central India.

LIFE HISTORY. *Larva.* "*After first moult.* One-fourth of an inch long; colour grass-green, with a pale yellowish lateral line; surface thickly covered with transverse bands of longish green pyramidal ciliæ; abdomen green; prolegs green; thoracic and anal legs green; head green, covered with black raised spots; stigmatæ yellow and shining. *After last moult.* Three-fourths of an inch long; cylindrical and rough; colour and general description same as at first moult. Habits slow. Feeds on the oval-leaved *Cassia* (C. Tora). *Pupa.* Changed into chrysalis October 7th, 1860. Succinctæ; darkish green; rather more than one-third of an inch long, pointed at each end; back very swollen; segments slightly marked with yellow stripes transversely, and black dots here and there; dorsal line dark green and well defined. Imago.—Came out on October 14th, 1860. *Habits.* Continually flying about the clumps of *Cassia Tora.* Flight as in other *Terias.* On the wing in Lucknow, Oudh, the whole year. Common." (Capt. H. L. Chaumette, MS. Notes.)

Distribution.—We possess specimens from Kawi Valley, Kashmir, taken by the late W. S. Atkinson; Kausali, W. Himalaya; Manpuri, Punjab, taken by the late C. Horne; Kutch; Bombay; and Mhow, Central India. In Mr. J. H. Leech's Collection are specimens taken at Rajaori, S. Kashmir, 4,000 feet elevation, in September. Mr. P. W. Mackinnon obtained it at "Masuri" (J. Bombay N. H. S. 1898, 588). Mr. W. Doherty obtained it at "Bagheswar, Askot, from 3,000 to 5,000 feet elevation, Eastern Kumaon" (J. A. S. Beng. 1886, 135). Dr. Felder's types of *Santana*, which we have recently verified, and now in Mr. W. Rothschild's Collection, were taken at Kaladungi, at the foot of the Kumaon Hills. Capt. Chaumette obtained it and reared the larva in Lucknow, Oudh (Ent. Mo. Mag. 1865, 37). Col. C. Swinhoe took it in "Karachi, in July, 1886" (J. Bombay N. H. S. 1887, 275); also at "Poona in June and September, Ahmednuggur in the same months, and in Bombay from July to October" (P. Z. S. 1885, 135), and in "Mhow, C. India, from June to October" (*id.* 1886, 430). Col. C. T. Bingham has specimens from Jabalpur, C. India. Mr. L. de Nicéville records specimens "taken in Karwar, North Kanara District, in October" (J. A. S. Beng. 1900, 252).

The *type* specimen of *venata*, and also that of the male described by Mr. Wallace as that sex of his Formosan species, *vagans*, are in the British Museum Collection.

Of our illustrations on Plate 565, figs. 1, 1a, male of *Wet* form from Western Himalaya, and 1b, the female from Bombay; figs. 2, 2a, b, male and female *Dry* form (*Pallitana* types) from Kutch.

NIRMULA RAMA.

Plate 565, figs. 3, 3a, b ♂ ♀ (*Wet*); 3c, d, ♂ ♀ (*Dry*).

Terias Rama, Moore, Proc. Zool. Soc. 1872, p. 566, ♀ *id.* Lep. of Ceylon, i. p. 121, pl. 46, fig. 5, 5a, ♂ ♀ (1881)—*Dry.*

Terias Cingala, Moore, Ann. Nat. Hist. 1877, p. 48; *id.* Lep. of Ceylon, i. p. 120, pl. 46, fig. 4, 4a, ♂ ♀—*Wet.*

Terias venata et *Rama,* Hampson, J. As. Soc. Bengal, 1888, p. 361.

Terias venata, Watson, J. As. Soc. Bengal, 1890, p. 267. de Nicéville, J. As. Soc. Bengal, 1899, p. 211.

Wet form (fig. 3, 3a, b, ♂ ♀). Male. Upperside yellow. *Forewing* with a broader black outer marginal band than in *Venata. Hindwing* with a similar narrow outer band, and a costal patch of pale salmon-coloured scales. Underside paler yellow. *Forewing* with a lower basal patch of pale salmon-coloured scales; also a faintly defined discocellular mark. *Hindwing* with two very faintly indicated transverse discal sinuous dusky squamous streaks, and a discocellular mark.

Female. Upperside paler and duller coloured, the basal areas irrorated with minute dark scales. *Forewing* with the outer band similar, but more distinctly dentated posteriorly, on its inner edge. *Hindwing* with the outer band much broader anteriorly than in male. Underside with similar indistinct ordinary markings on the hindwing as in male.

Expanse, ♂ $1\frac{4}{10}$ to $1\frac{6}{10}$; ♀ $2\frac{5}{10}$ inch.

Dry form (fig. 3c, d, ♂ ♀). Male. Upperside. *Forewing* with the outer band more distinctly dentated than in *Wet*. *Hindwing* with the outer band somewhat narrower; salmon-coloured patch similar to *Wet*. Underside. *Forewing* with similar salmon-coloured patch as in *Wet*, and hindwing with more distinct transverse discal sinuous streaks.

Female. Upperside. *Forewing* with the band sharply dentated and broken at its posterior end. *Hindwing* with the band comparatively narrower than in *Wet* form, and incomplete posteriorly. Underside with the transverse streaks on hindwing, as in male, distinct.

Expanse, ♂ $1\frac{6}{10}$, ♀ $1\frac{4}{10}$ to $1\frac{6}{10}$ inch.

HABITAT.—Ceylon; S. India.

DISTRIBUTION.—In Ceylon, Capt. Hutchison records it from the "Central Province Hills, 3,000 feet, in grass land and forest. Taken on the road to Rambodde, where they were in numbers by the roadside, and apparently at all seasons. Gregarious. Easily captured. Mr. F. M. Mackwood obtained it in the neighbourhood of Kandy" (Lep. Ceyl. i. 121). Dr. N. Manders obtained it "common in open country between 2,000 and 3,000 feet elevation" (J. A. S. Beng. 1899, 211). Mr. G. F. Hampson obtained it in the "Nilgiris! (*l.c.* 1888, 361). We possess the Ceylon type specimens, and also both sexes from the Nilgiris, and Trevandrum in Travancore. Capt. E. Y. Watson obtained it in Madras in July" (*l.c.* 267).

Of our illustrations on Plate 565, figs. 3, 3a, b, male and female of *Cingala*, the *Wet* form, and figs. 3c, d of the *Dry* form, *Rama*.

NIRMULA SIKKIMA.

Plate 565, fig. 4, 4a, b, ♂ ♀.

Terias venata, Elwes, Tr. Ent. Soc. 1888, p. 414.
Terias Rama, de Nicéville, Sikkim Gaz. 1894, p. 167.

Male. Upperside. *Forewing* with an outer black band similar to that in male

Dry form of *Rama*, except that the posterior end is more widely broken. *Hindwing* with the band also similar, but comparatively broader. Underside with very faintly-defined ordinary markings. Female. Upperside. *Forewing* with the outer band posteriorly narrower than in *Rama*. *Hindwing* with the band also narrower. Underside similar to male.

Expanse, ♂ $1\frac{6}{10}$, ♀ $1\frac{4}{10}$ inch.

Habitat.—Sikkim; Bhotan.

Described from specimens in our possession, taken by G. C. Dudgeon.

Mr. H. J. Elwes records it as being "found in Sikkim locally, from 6,000 to 9,000 feet elevation" (*l.c.* 414).

NIRMULA PSEUDOLÆTA.

Plate 566, fig. 1j, k, l, m, ♂.

Terias Rama, Moore, Journ. Linn. Soc. Zool. 1886, p. 45.

Male. Upperside. *Forewing* comparatively less acuminate at the apex than in *Læta*, the outer band somewhat broader, terminating posteriorly similar to that in male *Rama*, not abruptly at the lower median, as occurs in all males of *Læta*. *Hindwing* with a marginal decreasing, slender, almost continuous slightly-dentated line, which in *Læta* is always macular. Underside paler yellow than in Wet *Læta*. Both wings similarly flecked with pale reddish-ochreous scales, which are less numerous and indistinct.

Expanse, ♂ $1\frac{6}{10}$ inch.

Habitat.—Mergui, Lower Tenasserim.

Described from specimens in our Collection, taken by Dr. J. Anderson in Mergui, December and March, and Pataw Island, in March.

This species is quite distinct from specimens of typical *Læta* (which we have examined) taken by Col. C. H. E. Adamson in Upper and Lower Burma.

NIRMULA LÆTA.

Plate 566, figs. 1, 1a, b, c, d, e, f, g, h, i, ♂ ♀.

Terias Læta, Boisduval, Spec. Gén. Lép. i. p. 674 ♂ ♀ (1836). Doubleday, Gen. D. Lep. p. 79 (1847). Moore, Catal. Lep. Mus. E. Ind. Compy. i. p. 65 (1857). Lang, Ent. Mo. Mag. 1864, p. 104. Chaumette, *id. l.c.* 1865, p. 37. Moore, P. Z. S. 1865, p. 493. Wallace, Tr. Ent. Soc. 1867, p. 320. Moore, P. Z. S. 1878, 836. Swinhoe, P. Z. S. 1884, p. 507; *id. l.c.* 1885, p. 135; *id.* 1886, p. 429; *id.* J. Bombay N. H. Soc. 1887, p. 274; *id.* Tr. Ent. Soc. 1893, p. 307. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 50. Butler, Ann. Nat. Hist. 1888, p. 199. Taylor, Butt. of Orissa, p. 13 (1888). Ferguson, J. Bombay N. H. Soc. 1891, p. 443. Doherty, J. As. Soc. Beng. 1886, p. 135. Hampson, J. As. Soc. Beng. 1888, p. 361. Elwes, Tr. Ent. Soc. 1888, p. 413. de Nicéville, Sikk. Gaz. 1894, p. 167. Watson, J. Bombay N. H. Soc. 1894, p. 514; *id. l.c.* 1891, p. 51; *id.* 1897, p. 669. Davidson and Aitken, J. Bombay N. H. Soc. 1896, p. 571. Adamson, List Burma Butt. p. 42 (1897). Mackinnon, *id.* 1898, p. 588.

Terias Jaegeri, Ménétriés, Catal. Mus. Imp. Acad. Sci. Petrop. i. Lep. p. 84, pl. 2, fig. 1, ♂ (1855).

Wet form (figs. 1, 1a, b, c, d, e, f, ♂ ♀). Male. Upperside clear pale yellow. *Forewing* acuminated at the apex; cilia yellowish-ochreous; with a broad black apical marginal band curving dentatedly outward from middle of the costa and terminating abruptly at the lower median veinlet, below which it is continued by a more or less apparent slender thread, to the posterior angle. *Hindwing* with a marginal series of small black dentate spots, the upper two largest and conjoined, the lower minute and indicated as vein tips. Underside. *Forewing* with the ground-colour pale yellow, the cell and inner discal area being clear yellow, the posterior area from the base being glossy-white, and with a salmon-coloured patch of scales below middle of the cell; the costal and outer marginal area numerously flecked with minute reddish-ochreous striæ, some of which form a more or less slightly apparent slender subapical fascia; a slightly apparent blackish-scaled upper discocellular mark is also present. *Hindwing* with the ground-colour pale yellow, and numerously covered with minute reddish-ochreous striæ, those on the disc being most numerously packed, and there form transverse sinuous fasciæ; a slightly apparent blackish-scaled upper discocellular spot and a dot (sometimes two) above the cell, are also present.

Female. Upperside paler yellow. *Forewing* with the outward band as in male. *Hindwing* with the two upper marginal spots larger, the lower vein-tips minute. Underside similar to the male, the striæ on both wings less apparent.

Expanse, ♂ $1\frac{6}{10}$ to $1\frac{8}{10}$; ♀ $1\frac{6}{10}$ inch.

Dry form (figs. 1g, h, i, ♂ ♀). Male. Upperside. *Forewing* similar to Wet form. *Hindwing* with the upper marginal spots smaller. Underside. Both wings with the reddish-ochreous striæ less prominent than in male Wet form.

Female. Upperside and underside similar to same sex of Wet form.

Expanse, ♂ $1\frac{4}{10}$, ♀ $1\frac{6}{10}$ inch.

HABITAT.—Western and Eastern Himalayas; Upper and Lower India; Assam; Burma.

DISTRIBUTION.—We possess it from Kashmir, taken by Capt. Bayne Reed. In Mr. J. H. Leech's Collection are both sexes, taken at Rajaori, S. Kashmir, in September. Capt. A. M. Lang obtained it at "Kasauli, Western Himalaya; and at Umballa, where it seems to occur nearly all the year round. It has a very weak flight, amongst low herbage, on the skirts of woods and gardens" (Ent. Mo. Mag. 1864, 104). Mr. P. W. Mackinnon took it in Masuri, and the dry season form in the Dun, where it is extremely common in November and December" (J. Bombay N. H. S. 1898, 588). We possess it from Chuttar, N.W. India, taken by Col. J. W. Yerbury in October. Mr. W. Doherty records it from "Askot, Gori, and Kali Valleys, up to Dharchula, 2,000 to 5,000 feet elevation, in Eastern Kumaon" (J. A. S. Beng. 1886, 135). We possess specimens from Kutch, S.W. Punjab, taken by Mr. G. H. Wilkinson. Col. C. Swinhoe records "one specimen taken at Karachi in June, 1879" (P. Z. S. 1884, 507); also taken at "Poona from October to June; Ahmednuggur, September, October, November, and Bombay July, October, November, and December" (P. Z. S. 1885, 135); "in Mhow, C. India, it is the commonest butterfly; September to July" (*id. l.c.* 1886, 429); Messrs. Davidson and Aitken note that "this species is not nearly so common in Kanara as in other parts of the Bombay Presidency, but occurs at the northern end of the district" (J. Bombay N. H. S. 1896, 571). Mr. G. F. Hampson obtained it in the Nilgiris (J. A. S. Beng. 1888, 413). We possess a specimen from the Shevaroy Hills, taken by Dr. Short. Mr. H. S. Ferguson records it from "Pirmerd, Travancore" (J. Bombay N. H. S. 1891, 443). Mr. W. C. Taylor found it "common at Khorda, in Orissa" (List, p. 13). In the late W. S. Atkinson's Collection were specimens taken on Parasnath Hill, Lower Bengal. Mr. L. de Nicéville records "a single specimen taken in the neighbourhood of Calcutta" (J. A. S. Beng. 1885, 50). Col. C. Swinhoe has received specimens from the "Khasia Hills" (Tr. Ent. Soc. 1893, 307). Mr. H. J. Elwes writes, "this species occurs in Sikkim, but not abundantly, at from 7,000 to 9,600 feet elevation in July, August, and September" (Tr. Ent. Soc. 1888, 413). Col. C. H. E. Adamson obtained specimens, which we have verified, and who records it as "not uncommon about Bhamo, Upper Burma, in October, but scarce in Moulmein, Lower Burmah, in March" (List, 1897, 42). Capt. E. Y. Watson obtained specimens, during the Chin-Lushai Expedition of 1889-90, on the road "from Pauk to Tilin, in November, also at Tilin in December and April" (J. Bombay N. H. Soc. 1891, 51). Mr. O. Limborg obtained it on the road from "Moulmein to Meetan, Upper Tenasserim" (P. Z. S. 1878, 836).

Of our illustrations on Plate 566, figs. 1, 1a, are from a N. Indian male, and 1b, c, from a Travancore female, and figs. 1d, e, f, from a Karachi male and female of the *wet* season form; figs. 1g, h, i, from a Kutch male and female of the *Dry* form.

INDO-MALAYAN, CHINA, AND JAPAN SPECIES.

Nirmula Senna (Terias Senna, Felder, Reise Novara, Lep. ii. p. 212, ♂ (1865). *Habitat.* Malacca.

Nirmula Annamica (Terias Læta, Fruhstorfer, Deuts. Ent. Zeit. 1902, p. 302; *id.* Soc. Ent. 1903, p. 42. ? Terias Læta, Walker, Tr. Ent. Soc. 1895, p. 465.

? T. subfervens, de Nicéville, J. A. S. Beng. 1902, p. 26. *Habitat.* Annam; Siam; ? Hongkong.

Nirmula Hainana (Terias Hainana, Moore, Proc. Zool. Soc. 1878, p. 700. *Habitat.* Hainan.

Nirmula vagans (Terias Vagans, Wallace, Proc. Zool. Soc. 1866, p. 357; *id.* Trans. Ent. Soc. 1867, p. 321, ♀ (*nec* ♂). *Habitat.* Formosa.

Nirmula subfervens (Terias subfervens, Butler, Ann. Nat. Hist. 1883, p. 278; *id. l.c.* 1898, p. 65. T. Læta, De Lorza, Lep. Japon. p. 18 (1869). Pryer, Lep. Niphon, p. 10, pl. 2, fig. 10 (1886); *id.* Ent. Mo. Mag. 1888, p. 185. Leech, Butt. China and Japan, p. 426. *Habitat.* Corea; Japan.

Nirmula Betheseba (Terias Betheseba, Janson, Cistula Entom. i. p. 272 (1878). Butler, Ann. Nat. Hist. 1898, p. 63. Pryer, Lep. Niphon, p. 10, pl. 2, fig. 11 (1886); *id.* Ent. Mo. Mag. 1888, p. 185. Leech, *l.c.* p. 426. *Habitat.* Japan.

Nirmula Semperi (Terias Venata, Semper, Reise Phil. Lep. ii. p. 252, pl. 41, figs. 1, 2, ♂ ♀ (1891). *Habitat.* Luzon.

Genus TERIAS.

Terias, Swainson, Zool. Illust. 1st Ser. *text to* pl. 22 (1820-21). Horsfield, Catal. Lep. Mus. E. I. Compy. p. 134 (1829). Boisduval, Spéc. Gen. Lép. p. 651 (1836). Doubleday, Gen. D. Lep. p. 76 (1847). Butler, Cist. Ent. i. pp. 35, 44 (1870). Scudder, Proc. Amer. Acad. A. et Sci. 1875, p. 278. Moore, Lep. of Ceylon, i. p. 118 (1881). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 49. Distant, Rhop. Malayana, p. 302 (1885). Leech, Butt. of China, &c., ii. p. 425 (1893). Kirby, Allen's Nat. Libr. Lep. ii. p. 232 (1896).

Terias (sect. 3), Semper, Reise Phil. Lep. p. 253 (1891). Butler, Ann. Nat. Hist. 1898, p. 66.

Eurema (part), Hübner, Verz. bek. Schmett. p. 96 (1816). Staudinger, Exot. Schmett. i. p. 27 (1882), *id.* ii. p. 66 (1892).

IMAGO.—*Forewing* subtriangular, apex obtuse, costa much arched from the base, exterior margin very slightly oblique, posterior margin recurved; costal vein extending to beyond half the margin; first subcostal branch rising at less than one-third before, and second, close to end of the cell, third, fourth, and fifth, beyond the cell; upper discocellular erect, lower bent outward, the radial from end of their angle; cell broad, extending to fully half the wing; middle median branch at one-third before lower end of the cell; submedian vein much recurved. *Hindwing* broadly obovate, the exterior margin medially somewhat angularly produced in both *Wet* and *Dry* form; precostal vein almost atrophied; costal vein much arched from the base; subcostal straight to end of the cell, its first branch emitted close to end of the cell, and much curved upward; upper discocellular shortest, lower outwardly oblique, and very concave, radial from their angle; lower median branch at half before end of the cell; submedian vein straight; internal vein recurved. *Body* slender; thorax hairy; palpi short, scarcely extending beyond the head; flat, squamose, third joint minute and pointed; legs slender, tarsi long; antennæ short, club moderately stout.

Male. Underside of *forewing*, in both *Wet* and *Dry* forms, with a *secondary sexual* narrow linear *depressed streak* of pale violet *glandular scales*—extending *along each side of basal portion of the median vein** to near the lower branch,—these streaks having an opaque appearance on holding the wing up to the light; the posterior basal area of the wing is also clothed with appressed glossy-white scales.

Larva.—"Cylindrical. Colour green, with a white line along each side shading into the green of the back. Head green; fine rugæ across the back set with short hairs. Feeds on *Cassia*."

Pupa.—"Suspended by posterior end and a thread at the middle; single pointed at both ends, the back, which is placed upwards, is gibbous; a sharp ridge runs along each side. Imago emerges in about eight days" (Dr. A. Leith, Bombay).

Type.—T. Hecabe.

This is a most difficult and puzzling genus of butterflies to study, from the fact that the species, having several broods during the year, and these broods, where occurring in areas—in which the seasonal and climatic changes are more or less well-marked—show certain *distinctive features* in their markings, these features being different, and recognizable, if carefully compared *inter-se* with those of the brood of the co-ordinate form of other localities.

The species of the genus, within our limits, occur in the Hills and Plains, North and South, and the different climatic and atmospheric conditions, of these areas, have great influence upon the production of the various patterns of the markings in the broods produced during the year, especially in those areas where the climate is very wet, moderately wet, or extremely dry. The dominant species, and also the most widely distributed, is *Hecabe*, this species, in a *Wet* and *Dry* form only, occurring both in our Northern and Southern areas. A characteristically noticeable feature, in all the species, is that of the numbers of the *cell-marks* on the underside of the forewing, in both sexes—as shown below:—

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* These two *secondary sexual brands*, as above described, are present in the *males* of all the species of true *Terias*, and were first correctly noticed by Mr. L. de Nicéville, in Journ. As. Soc. Bengal, 1885, p. 49; and erroneously stated as being present on the *submedian* vein, by Capt. E. Y. Watson, in Journ. Bombay Nat. Hist. Soc. 1894, p. 508.

Table showing the Number of Cell-marks.

NAME OF SPECIES.	NUMBER OF MARKS.
Hecabe	Two.
excavata	Ditto.
Purreea	Ditto.
fimbriata	Ditto.
Swinhoei	Ditto.
Asphodelus	Ditto.
Æsiopeoides	Ditto.
Davidsoni	Three.
Citrina	Ditto.
rotundalis	Ditto.
uniformis	Ditto.
grandis	Ditto.
Silhetana	Ditto.
Kana	Two.
Andersoni	Ditto.
Merguiana	Three (basal sometimes absent in *male*).
fraterna	Two (Three in *Extra Dry* form).
patruelis	Two.
Nicobariensis	Ditto.
Rœpstorffii	Three.
Cadellii	Ditto.
Andamana	One (In *Wet*, *Dry*, and *Extra Dry*).
Blairii	Two.
Moorei	Three.

Arrangement of the Species.—With the exception of *Hecabe*, which has a range of distribution throughout our limits, we have arranged the various described species in geographically local-groups, with the view of thus more clearly indicating the representative, or co-ordinate, species occurring in each of the various areas where the genus is found.

Species locally restricted.—As a result of careful and critical comparison of numerous specimens of the various named species, we find that they are of restricted habitat, and topomorphic representative species, each species also producing the *seasonal forms* with modified pattern of the markings on the upperside, this pattern, in the different forms of those of the species as occur in its *area of habitat*, are found to be perceptibly different, on careful examination and comparison with the co-ordinate forms of other areas—each successive or seasonal form producing the distinctive feature or local difference observable. These differences in the shape of the band as occur in the *Wet*, *Dry* and *Extra-Dry* forms are therefore *endemic*, occurring only in those produced in the same area, and are consequently distinct local species.

Some specimens are found with a very slightly defined *subapical* patch on the underside of the forewing, this being an indication of a brood, or an emergence *intermediate* between the end of the *Wet season* and the commencement of the *Dry*. Other specimens also occur, indicating a brood, or an emergence between the period of the *Ordinary Dry* and the *Extreme-Dry* season.

In the N.W. Himalayas and drier areas of Western India—especially in the Punjab Plains and its desert tracks, we note the absence or paucity of specimens of the *Wet* form, in comparison to the large number of the *Dry* form, occurring in the following locally restricted species, viz., Purreea, excavata, fimbriata, irregularis, apicalis, *Æsiopeoides*, *Swinhoei*, *Asphodelus* and *Narcissus*.

Of these various allied local species that have been described—the type specimens of most of which are in our own Collection, or, we have personally compared the originals—those species of the Northern, or drier areas, also produce the *Wet* and *Dry* form only, whereas, in the more Southern and South Eastern areas, where the seasons are more prominently defined, a characteristically-marked *Extreme Dry* form is also produced.

TERIAS HECABE.

Plate 567, figs. 1, a—i, ♂ ♀; fig. 2 ♂, *ab. var.*

Papilio Hecabe, Linnæus, Syst. Nat. ed. X, p. 470—*excl. ref. Petiver*[*] (1758) Edwards, Glean. Nat. Hist. i. pl. 253 (1758). Linn. Mus. Lud. Ulr. p. 249 (1864), *id.* Syst. Nat. ed. XII. p. 763 (1767). Fabricius, Syst. Ent. p. 472 (1775). Sulzer, Gesch. Ins. p. 143, pl. 15, fig. 7 (1776). ? Cramer, Pap. Exot. ii. p. 40, pl. 124, fig. B. C. (1777). Fabr. Spec. Ins. ii. p. 42 (1781). Herbst, Nat. Schmett. v. p. 171, pl. 106, fig. 3, 4 (1792).

Eurema Hecabe, Hübner, Verz. bek. Schmett. p. 96 (1816). Kirby, Catal. D. Lep. p. 448 (1871). Kheil, Rhop. Nias, p. 34 (1884). Aurivillius, Kongl. Svensk. Vet. Akad. Handl 1882, p. 60.

Terias Hecabe, Swainson, Zool. Illustr. i. ser. text, pl. 22 (1820-21).

Pieris Hecabe, Godart, Encyc. Méth. ix. p. 134 (1819). Horsfield, Catal. Lep. Mus. E. I. Compy., p. 135, pl. i. fig. 12, iv. fig. 8, 8a, *larva* and *pupa* (1829). Boisduval, Spec. Gen. Lep. i. p. 669 (1836). Doubleday, Gen. D. Lep. i. p. 79 (1846). Moore, Catal. Lep. Mus. E. I. Compy. i. p. 63, pl. 1, fig. 11, 11a, *larva* and *pupa* (1857). Lang, Ent. Mo. Mag. 1864, p. 104; *id.* Proc. Zool. Soc. 1865, p. 492. Butler, Catal. Fabr. Lep. Brit. Mus. p. 227 (1869). Kirby, Trans. Ent. Soc. 1870, p. 14. Moore, Proc. Zool. Soc. 1878, p. 836; *id.* Lep. of Ceylon, p. 118, pl. 45, fig. 1, 1a, b, c, ♂ ♀ *larva* and *pupa* (1881); *id.* P. Z. S. 1882, p. 252; *id. l.c.* 1886, p. 45. Butler, Proc. Z. S. 1883, p. 150; *id. l.c.* 1886, p. 372; *id.* Ann. Nat. Hist. 1868, p. 220, *id. l.c.* 1898, p. 69. Distant, Rhop. Malay. p. 304, pl. 26, fig. 19, ♂ (*Wet*) ? figs. 11, 15 (*Dry*) (1885). Doherty, Journ. As. Soc. Bengal, 1886, p. 135. Swinhoe, P. Z. S. 1884, p. 507; *id. l.c.* 1885, p. 136, *id.* 1886, p. 430; *id.* Ann. Nat. Hist. 1887, p. 274; *id.* Tr. Ent. Soc.

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[*] See Philippine species; *poste*.

1891, p. 308. de Nicéville, J. As. Soc. Beng. 1885, p. 49; *id. l.c.* 1899, p. 212. Hampson, J. As. Soc. Beng. 1888, p. 361. Elwes, Tr. Ent. Soc. 1888, p. 412; *id.* J. As. Soc. Beng. 1887, p. 430. Taylor, List Orissa Butt. p. 13 (1888). Watson, J. Bombay N. H. Soc. 1890, p. 7. Ferguson, J. Bombay N. H. S. 1891, p. 13. Davidson and Aitken, J. Bombay N. H. Soc. 1890, p. 359; *id. l.c.* 1896, p. 570, pl. vi. fig. 5, 6, *larva* and *pupa*. Snellen, Mid. Sumatra Lep. p. 23, pl. 1, fig. 6, 7 (1892). de Nicéville, Sikkim Gaz. 1894, p. 167; *id.* Walker, Trans. Ent. Soc. 1895, p. 464. J. As. S. Beng. 1895, p. 497; *id.* 1899, p. 212. Adamson, List Burma Butt. p. 42 (1897). Mackinnon and de Nicéville, J. Bombay N. H. S. 1898, p. 586. Fruhstorfer, Deuts. Ent. Zeit. 1902, p. 302. de Nicéville, J. As. S. Beng. 1902, p. 26.

Terias Hecabeoides, Menetriés, Catal. Mus. Petrop. Lep. i. p. 85, pl. 2, fig. 2, ♂ (1855)—*Wet form.* Butler, Trans. Linn. Soc. Zool. 1879, p. 550. Swinhoe, Proc. Zool. Soc. 1884, p. 508; *id. l.c.* 1885, p. 136; 1886, p. 430; *id.* J. Bombay N. H. Soc. 1887, p. 274. Moore, Lep. of Ceylon, i. p. 119, pl. 45, fig. 3, 3a, b. ♂ ♀ (1881)—*Wet.*

Terias simulata, Moore, Lep. of Ceylon, i. p. 119, pl. 45, fig. 2, 2a, b, ♂ ♀ (1881)—*Dry form.*

Terias contubernalis, Moore, Journ. Linn. Soc. Zool. 1886, p. 46, ♂ ♀—*Dry form.*

Terias curiosa, Swinhoe, Proc. Zool. Soc. 1884, p. 508, pl. 4, fig. 3, ♂ *id.* J. Bombay N. H. Soc. 1887, p. 275—(*aberr. var.*).

Terias Lacteola, Distant, Rhop. Malay, p. 466, *woodcut*, fig. 120, ♀ (*alb. var.*).

Terias Suava (pt.), Butler, Ann. Nat. Hist. 1898, p. 69 —*nec Boisduval.*

Wet form (fig. 1, 1a, b, c, d, e, ♂ ♀). Upperside. Both wings chrome-yellow, palest in recently-captured specimens; cilia yellowish-white. *Forewing* with the costal edge at the base, irrorated with greyish-black scales, thence extending in a black line to the first subcostal branch, where it joins a broad outer-marginal black band, the inner-edge of this band curving dentatedly outward from the subcostal to middle of the upper median branch—where it is prominently angled, the medial portion of the band below the angle being incised to half its width, and dentate at the middle median branch, the lower portion of the band becoming wide and is sharply angled at the lower median, below this latter veinlet its inner-edge is even and inclined more or less inward. *Hindwing* with a marginal black band of moderately broad but varying width, its inner-edge being slenderly dentate at the veins. Underside sulphur-yellow. *Forewing* with an indistinctly-defined grey-black slender-lined discocellular mark, two cell marks, namely, a zigzag mark in middle, and a subbasal dot; there is also a point at tip of the anterior veins; the *sexual brand* on both sides of the basal portion of the median vein being visibly opaque on holding the specimen up to the light. *Hindwing* with a similar discocellular mark, a ringleted-mark in middle of the cell, a small circlet above the cell near the base, and another below the cell, a discal zigzag series of squamoids marks, and also a minute dot at the vein tips.

Female. Upperside paler yellow than in male. *Forewing* with the black outer marginal band slightly broader than in male, its upper inner-edge generally less curved and dentated above the median angle. *Hindwing* with the outer marginal band broader, but less distinctly defined than in male. Underside. Ordinary markings similar to the male.

Expanse, ♂ $1\frac{6}{10}$ to $2\frac{2}{10}$; ♀ $1\frac{2}{10}$ to $2\frac{1}{10}$ inches.

Dry form (fig. 1, f, g, h, i, ♂ ♀). Male. Upperside similar to the Wet form. *Forewing* with the marginal black band slightly shorter at the lower end. *Hindwing* with the band narrower than in Wet form. Underside. Both wings with the ordinary markings more distinct, and the discocellular mark generally broader. *Forewing* with the *sexual brands* as in *wet* form, and a more or less slightly-defined, or a distinctly formed, brown subapical patch, and in this form, a minute black point is always present at the base of the lower subcostal veinlet.

Female. Upperside. *Forewing* with the marginal band as in female Wet form, but slightly shorter at its lower end. *Hindwing* with the band somewhat narrower. Underside similar to the male.

Expanse, ♂ $1\frac{6}{10}$ to 2, ♀ $1\frac{4}{10}$ to $2\frac{1}{10}$ inches.

Aberrant Var. (fig. 2 = *curiosa*). Male (*Wet form*). Upperside. "*Forewing* with the costa black, a broad black marginal band commencing just outside the middle of the costa, sinuous internally, and filling nearly the whole of the marginal area. *Hindwing* with the black border as in *Hecabeoides*." Underside. *Forewing* with very slightly-defined apical-marginal dots and two discocellular dots, the two *sexual brands* being also present. *Hindwing* also with marginal dots and a discocellular ringlet.

Expanse, $1\frac{6}{10}$ inch.

Habitat.—Lower Western, Central, and Eastern Himalayas; throughout Continental India; Ceylon; Burma; Tenasserim; Andamans; Nicobars; Malay Peninsula; Siam; Annam; S.E. China; Sumatra; Borneo; Java.

Historical Note on the type of Hecabe.—That Linnæus in Syst. Nat. X. ed. p. 470 (1758) described this butterfly from a specimen (presumably) in his own possession, and not from the figure in Petiver—which he there quotes as an illustration of his species, is evidenced by his describing the *underside* of his own specimen, whereas, Petiver figures the *upperside* only. In his "Mus. Ludov. Ulricæ," p. 249 (1764), this species is more fully described, Petiver's figure being here quoted as *Pap. Luzoniensis*, and Edwards' figure added as a second illustration. Again, in Syst. Nat. XII. ed. p. 763 (1767) the same description is here repeated, the Mus. Ulricæ being quoted, and both Petiver's and Edwards' figure given as illustrations.

In Clerck's unpublished "Icones," vol. iii., pl. 6, figs. 4*a*, *b* (of which I have a correct tracing obtained from the Stockholm Academy) represent the upper and underside of (probably) the Linnæan specimen.

In Linné's Cabinet of Insects, at the Linnæan Society of London, there is a specimen of this butterfly—a male of the *wet* form, labelled "*Hecabe*," which is stated by the Librarian, Mr. A. W. Kappel, to be in Linné's *own handwriting*. This specimen, on the upperside of the forewing, has the broad anterior portion of the band angled at the middle of the upper median veinlet, and a broad posterior portion, and also the broad band on the hindwing, this pattern of the bands being the same as in that which we have described and figured, as typical *Hecabe*, in this work.

Petiver's insect is stated by that author to have come from "Luzon," and his figure, in "Gazoph." pl. 28, represents the butterfly on the upperside, with the band on forewing as being anteriorly somewhat narrowed (probably from abrasion), and *not angled* at the upper median. This anterior angulation of the band is not represented in Clerck's drawing, but is well indicated in Edwards' figure. We have, therefore, rejected Petiver's figure, as an erroneous identification (by Linné). Petiver's figure agrees exactly with that given in Semper's Reis. Philip. Lep. pl. 41, fig. 13, which is there given as the male of the Philippine representative of *Hecabe*, and we have therefore assigned it to that local-group of species.

Larva.—"Cylindrical, slightly depressed, long, rugose; head large. Colour green."

Pupa "suspended by the tail and a moderately long band; abdominal segments round, the thorax much compressed; wing-cases uniting to form a sharp keel, the head case terminating in a short pointed snout. Ordinarily the pupa is solitary and green. The favourite food of the larva, in the Kanara District, Bombay, is *Sesbania aculeata*, a Monsoon annual; it also feeds readily on *Cassia Tora*" (Davidson and Aitken, J. Bombay N. H. S. 1890, 359).

Habits of Imago; Larva; Pupa.—In Sumatra "All species of *Terias* are weak on the wing, fly slowly, and never leave the ground for a high flight. They are all, with the exception of *T. Harina*, found in open places, in gardens, on roads, and near houses, the males frequently assembling in large numbers on wet spots on roads, and by the sides of rivers and streams. *T. Hecabe* sometimes appears in swarms, and its larva may then prove very destructive to *Cassia* plantations. *Cassia florida* is its favourite food-plant, on which the eggs are sometimes deposited singly, as are the eggs of *Catopsilia*, but sometimes on a single leaf a large number are placed in a rhomboid shape. In the latter case the green pilose larva with a yellowish-white lateral streak and a black head live in societies, and the pupa are also suspended sociably, a fact not previously, we believe, observed in Lepidoptera. If the pupa hang from leaves they are green, if near flowers of the *Cassia* they are yellow, and if the caterpillars leave the food-plant and pupate on certain high *Gramineæ* they are blackish-brown like the seed of the grass. As the pupæ are arranged at regular distances apart, the deception is a very good one, and must greatly protect them, as men, animals, and birds at a superficial glance would take these pupæ to be only withered flowers of the *Cassia*, or ripe seeds of the grass. After six days in the pupa state the imago emerges. Though so weak and slow in flight, they are very clever in avoiding being caught by the net." (Dr. L. Martin, J. As. Soc. Bengal, 1895, 499.)

WET AND DRY FORM ONLY KNOWN.—As a result of our study of the various species of this genus, we find that the typical, or dominant, species—*Hecabe*, is represented by *two forms only*, namely, those of the *Wet* and *Dry* form. These two forms being, *presumably*, each seasonally produced only in alternating climatic areas, or both forms occurring together in the continuously-drier, or arid areas. The pattern and shape of the band on upperside of both wings, in each form, from all our cited areas, being identically the same—this, doubtless, is due to the climatic conditions, in each of the several areas, being the same during the periods of its existence. Whether these two forms of *Hecabe* are each produced alike, in *successive broods only* during the period of the annual local-equivalent of the *Wet* and *Dry* season, or, *both forms* appear together throughout the annual cycle of its existence, cannot at present be determined.

The following is a table showing some interesting facts on the above point, the dates of capture being taken from authentic labels of the captors:—

DATES OF APPEARANCE OF HECABE.

LOCALITY.	WET FORM.	DRY FORM.	COLLECTOR.
Rajaori, S. Kashmir	September	September	J. H. Leech.
Campbellpur	June; Sept.; Oct.; Nov.	November	Col. Yerbury.
Thundiani	September	July; September	Ditto.
Karachi	July; August	March; August; Oct.; November; December	Col. Swinhoe.
Belgaum	October	October	Ditto.
Poona	July	June	Ditto.
Bombay	January; September	Jan.; July; Aug.; Nov.	Ditto.
Ahmednuggur	——	July; August; October	Ditto.
Sattara	September	——	Ditto.
Assam	September	November	Mrs. Span.
Chittagong	May; June; September	——	ex Col. Bingham.
Mergui	December	——	Dr. Anderson.
Rangoon	May; July; Aug.; Sept.	April	——
Pegu	April; May; September	——	——

DISTRIBUTION (Within own area).—We possess specimens of the *Wet* and *Dry*-

season form of this species as above described and figured, from the widely spread areas in which it is found; as follows:—*Wet* and *dry* form from Kashmir, taken by Capt. R. Bayne Reed; Simla; Campbellpur, *wet*, June, *dry*, November; Thundiani, *wet* and *dry*, September; Hassan Abdal, *wet*, June; Rawul Pindi, *wet*, September, taken by Col. J. W. Yerbury; Nepal (Genl. G. Ramsay); Darjiling, and Bhotan (Mr. G. C. Dudgeon); Ahmednuggur, *wet* and *dry*, July, October; Karachi, *wet*, June; Bombay, *wet*, June, *dry*, January; Poona, *wet*, June and July; Belgaum, *dry*, August, taken by Col. C. Swinhoe; Nilgiris, *wet* and *dry* (Mr. G. F. Hampson); Madras, *wet;* Ceylon, *wet* and *dry;* Barrackpur, Calcutta, *wet* and *dry* (J. F. Rothney); Assam *wet;* Chittagong, *wet*, June, September; Rangoon, *wet*, August (Col. C. T. Bingham); Burma, *wet* (Col. Adamson); Mergui (Dr. Anderson); Andamans; Nicobars (Mr. F. de Roepstorff); Malacca, *wet;* Nias, *wet;* Sumatra, *wet* and *dry;* Java, *wet* and *dry* (Dr. Horsfield); S. E. China, *wet* and *dry*. Col. C. Swinhoe possesses verified specimens from Karachi, *dry* form taken in January, September, October, and November; Bombay, *dry*, March; Sattara; Belgaum, *wet*, October; Poona, *wet*, July. Col. C. T. Bingham has specimens from Jabulpur, *wet*, September; Nowgong, Assam, *dry*, November; Pegu, *wet*, April and May; Siam and Tonkin.

Capt. A. M. Lang obtained it in the "Simla Hills" (Ent. M. Mag. 1864, 104). Capt. Chaumette "captured it in Oudh" (*l.c.* 1865, 37). Mr. J. H. Hocking took it at "Dharmsala, Kangra District" (P. Z. S. 1882, 252). Mr. W. Doherty records it as being found "everywhere, in Kumaon, up to 8,000 feet, occasionally higher" (J. A. S. Beng. 1886, 135). "This is the commonest species of the genus in Masuri and the Dehra Dun" (Mr. P. W. Mackinnon, J. Bombay N. H. S. 1898, 586). Col. C. Swinhoe records it from "Karachi, appearing plentifully from April to August" (P. Z. S. 1884, 507). Also "common everywhere in Bombay and the Dekkan from October to May" (*id.* 1885, 136), and at "Mhow in February, July, September, October, and November" (*id.* 1886, 430). Col. Swinhoe also obtained one example of the variety *curiosa*, at Karachi in August, 1879 (*id.* 1884, 508). Mr. G. F. Hampson records it from the "Nilgiris" (J. As. S. Beng. 1888, 361). Capt. E. Y. Watson obtained "numerous specimens in Mysore during November" (J. Bomb. N. H. S. 1890, 7), and records it as "common in Madras in May, June, and July" (J. A. S. Beng. 1890, 267). Dr. N. Manders says it is "abundant everywhere in Ceylon, and occurs at all seasons, the larva feeding on the Madras Thorn" (J. A. S. Beng. 1899, 212). Mr. H. S. Ferguson found it "common in Travancore, S. India, in low country and the Hills" (J. Bombay N. H. S. 1891, 43). Mr. W. C. Taylor says it is "common at Khorda, Orissa" (List, p. 13). Mr. J. Rothney found it "very common in Barrackpur Park, near Calcutta, from March to October, especially during the rains, and is a lover of sunshine" (Ent. M. Mag. 1882, 35). Mr. L. de Nicéville also records it as "common at all seasons in the neighbourhood of Calcutta" (J. A. S. Beng. 1885, 50). Col. C. Swinhoe has received numerous specimens from the Khasias (Tr. Ent. Soc. 1893, 308). Mr. H. J. Elwes says it is "common in Sikkim, and extends from the Terai to at least 10,000 feet elevation" (Tr. Ent. Soc. 1888, 412). Mr. L. de Nicéville also says it is "common in Sikkim, and flies all the year round at low elevations, it being only stragglers that extend their flight to so great an elevation as 10,000 feet" (Sikkim Gaz. 1894, 167). In Burma, it was obtained by Col. C. H. E. Adamson. Capt. E. Y. Watson obtained it "during the Chin-Lushai Exped. of 1889-90, at Pokoko and Pauk in September, and at Tilin from November to May" (J. Bomb. N. H. S. 1891, 51), and also "in the Chin Hills the *dry*-season form occurred commonly in April, and the *rainy* season form in May and June, these were noticed only up to 3,500 feet" (*id. l.c.* 1897, 669). Mr. O. Limborg obtained it "on the road from Moulmein to Meetan, at Hatseiga, and Paboga, Upper Tenasserim" (P. Z. S. 1878, 836). Dr. J. Anderson obtained it in Mergui, "in December and March" (J. Linn. S. Z. 1886, 46).

Of our illustrations of *T. Hecabe*, on Plate 567, figs. 1, 1a represent a male and female *Wet* form from Simla; 1b, c, male and female *Wet* form from Karachi, 1, d, e, male and female *Wet*, also from Karachi, taken in August; figs. 1, f, g, male and female *Dry* form from Belgaum and Ahmednuggur, both taken in October; figs. 1, h, i, male and female *Dry* form (types of *contubernalis*) from Mergui; fig. 2 is copied from the Karachi figure of *T. curiosa*.

TERIAS PURREEA.

Plate 568, figs. 1, 1a, ♂, 1b, ♀ (*Wet*); 2, 2a, b, ♂ ♀ (*Dry*).

Terias Purreea, Moore, Proc. Zool. Soc. 1882, p. 252, ♂ (*Dry*). Butler, *id. l.c.* 1886, p. 371.

Wet form (fig. 1, 1a, b, ♂ ♀). Male. Upperside. *Forewing* with the black outer band narrower throughout than in local *Wet* form of Hecabe, the lower portion small, and its inner-edge inwardly oblique and indented. *Hindwing* with a slightly-defined slender marginal dentated-line. Underside. Both wings with ordinary marks very indistinctly defined. *Forewing* with two cell-marks.

Female. Upperside paler. *Forewing* with the band similar to the male. *Hindwing* with the marginal line slightly indicated only by the vein tips. Underside as in the male.

Expanse, ♂ $1\frac{6}{10}$ to $1\frac{8}{10}$; ♀ $1\frac{8}{10}$ to 2 inches.

Dry form (fig. 2, 2a, ♂, 2b, ♀). Male. Upperside. *Forewing* with the marginal band similar to *Wet* form, except that it is less angular at the upper median, and less indented on its lower inner-edge. *Hindwing* with a slender marginal dentated line. Underside. Both wings with distinctly-defined ordinary marks. *Forewing* with a prominent brown subapical patch, two cell-marks, and also a minute black point at base of lower subcostal branch, and a slight oblique-spot near posterior angle.

Female. Upperside paler. *Forewing* with the outer band more angled at the upper median than in male, its lower portion similar. *Hindwing* with a very slightly-defined slender marginal line, or only slight tip to the veins. Underside with markings similar to the male.

Expanse, ♂ $1\frac{8}{10}$, ♀ $1\frac{6}{10}$ inch.

Habitat.—Lower Western Himalayas; Upper Punjab.

Distribution.—The *type* of the male and female (*Dry* form) is in the British Museum Collection. We possess a male *co-type* from Dharmsala, Kangra District, taken by the Rev. J. H. Hocking, a male from Lahej, N.W. Punjab, also a female from Thundiani, taken by Col. J. W. Yerbury; also a female from Gurhwal. Its capture is recorded by Col. Yerbury, at "Attock Bridge, November; Campbellpur, November, and Hassan Abdal, in October" (P. Z. S. 1886, 371).

Of our illustrations on Plate 568, figs. 1, 1a, b, are from a *wet* male and female from Campbellpur; 2, 2a, male *Dry* form, from Gurhwal; 2b, female *Dry* form, from Thundiani, taken by Col. Yerbury in September.

TERIAS EXCAVATA.

Plate 568, figs. 3, 3a, ♂; 3b, ♀.

Terias excavata, Moore, Proc. Zool. Soc. 1882, p. 252, ♂ ♀ (*Dry form*). Butler, Proc. Zool. Soc. 1886, 372.

Dry form. Male. Upperside. *Forewing* with the black marginal band comparatively narrower apically than in male *Dry* local form of *Hecabe*, less angled at upper median, and its lower portion smaller. *Hindwing* with a narrower marginal band. Underside with slightly-defined ordinary marks. *Forewing* with two cell marks, and a slightly-defined subapical patch.

Female. Upperside paler. *Forewing* with the black marginal band more angled at the upper median than in male, the lower portion smaller than in female *Hecabe*, and its inner-edge slightly outwardly-oblique. *Hindwing* with a much narrower marginal band than in female *Hecabe*. Underside. Both wings with the ordinary marks more defined than in male. *Forewing* with a more distinctly-formed brown subapical streak than in male.

Expanse, ♂ ♀ $1\frac{8}{10}$ inch.

Habitat.—Lower Western Himalayas; Upper Punjab.

Distribution.—The *type* specimens were taken by the Rev. J. H. Hocking at Dharmsala, in the Kangra District, and are in the British Museum Collection. We possess a female *co-type*, from Kangra, and both sexes from the Lahore District, North Punjab, also a female from Campbellpur, taken by Co^{l}. J. W. Yerbury, who records its capture in November.

Of our illustrations on Plate 568, figs. 3, 3a, are from the male and female Lahore specimens, 3b, from the *co-type* female, from Kangra.

TERIAS FIMBRIATA.

Plate 568, figs. 4, 4a, ♂ ; 4b, ♀.

Terias fimbriata, Wallace, Trans. Ent. Soc. 1867, p. 323, ♂ (*Dry form*).
Terias Suava (pt.), Butler, Ann. and Mag. Nat. Hist. 1898, p. 69.

Dry form. Male. Upperside clear yellow ; cilia yellow. *Forewing* with a black outer marginal band narrower than in male *Dry* form of *Purreea*, its apical portion shorter and angled at the lower subcostal (in *Purreea* the angle is at upper median), below the angle to the next veinlet is an outwardly-oblique cluster of black scales, the marginal band from thence to the posterior angle being very narrow and inwardly dentate at each veinlet. *Hindwing* with a marginal row of very small dentate dots, one at each vein tip. Underside. Both wings indistinctly irrorated with minute blackish scales ; tip of the veins with a black dentate dot ; ordinary markings distinct, the discocellulars and basal marks being inwardly brown edged. *Forewing* also with a more or less defined sinuous subapical brown streak, a minute black dentate dot at base of the lower subcostal veinlet, and two ordinary cell-marks.

Female. Upperside paler than male. Both wings with similar marginal markings, those of the underside being also very slightly apparent. Underside. Both wings with the markings as in male, but more distinct, the subapical brown streak on the forewing being broader.

Expanse, ♂ ♀ $1\frac{9}{10}$ to 2 inches.

Habitat.—Western Himalayas.

Distribution.—We possess the male *type* specimen, from Masuri, a male from Kashmir, taken by Capt. H. B. Hellard (who records it in his MS. Notes, as being found during "July, August, and September"). We also have both sexes from Gurhwal.

Of our illustrations on Plate 568, figs. 4, 4a, are from the male *type*, from Masuri ; fig. 4b, from a Gurhwal female.

TERIAS IRREGULARIS.

Plate 568, fig. 5, 5a, ♂ (*Dry form*).

Terias irregularis, Moore, Proc. Zool. Soc. 1882, p. 253, pl. 12, fig. 3, ♂ (*Dry*).

Wet form. Female. Upperside pale lemon-yellow. *Forewing* with the marginal band broadly oblique and outwardly-curved from the costa, and somewhat sinuous apically, its lower portion narrow. *Hindwing* with a slightly-defined marginal point at the vein tips. Underside. Both wings with slightly-defined ordinary marks. *Forewing* with two cell-marks.

Expanse, ♀ $1\frac{8}{10}$ inch.

Dry form (fig. 5, 5a, ♂). Male. Upperside pale yellow. *Forewing* with the black marginal band broadly oblique and slightly sinuous apically, excavated in the middle, and sinuous at the posterior end. *Hindwing* with a very slender marginal dentated line. Underside with distinct brownish-edged ordinary marks. *Forewing* with a brown subapical patch, and two cell-marks.

Female. Upperside paler. *Forewing* with the marginal band sharper angled, the posterior portion indented on its inner-edge. *Hindwing* similar to male. Underside with very prominent chestnut-brown ordinary marks, and *forewing* with subapical patch.

Expanse, ♂ ♀ $1\frac{7}{10}$ to 2 inches.

Habitat.—Lower Western Himalayas.

Distribution.—The *type* of both sexes, taken by the Rev. J. H. Hocking, in the Kangra District, are in the British Museum. We possess *co-type* males from Dharmsala, also taken by Mr. Hocking; also a female of the *Wet* form from Rawul Pindi, taken in April, and both sexes of the *Dry* form from Rawul Pindi, Campbellpur, November; Khairabad, November; Abbottabad, October, by Col. J. W. Yerbury. Males of the *Dry* form are in Mr. J. H. Leech's Collection, taken at Rajaori, Southern Kashmir, in September.

Of our illustrations on Plate 568, fig. 5, 5a, is from the male *co-type*, from Dharmsala.

TERIAS APICALIS.

Terias apicalis, Moore, Proc. Zool. Soc. 1882, p. 253, pl. 12, fig. 2, ♂ (*Dry*).
Terias simplex, Butler, Ann. and Mag. Nat. Hist. 1886, p. 217, pl. 5, fig. 2, ♀ (*Dry*).

Dry form. Male. Upperside pale yellow. *Forewing* with the marginal band apically confined to a narrow costal portion, the lower part from the subcostal veinlet composed of almost-disconnected, very small speckled-spots. *Hindwing* with a marginal row of minute spots. Underside. Both wings with distinct chestnut-brown ordinary marks. *Forewing* with a distinct brown subapical streak, and two cell-marks.

Female. Upperside paler than in male. *Forewing* with the band somewhat broader at the apex, the lower portion similar, but more connected. *Hindwing* as in the male.

Expanse, $1\frac{4}{10}$ inch.

Habitat.—Lower Western Himalayas.

Distribution.—The *type* specimens, taken by the Rev. J. H. Hocking in the Kangra District, are in the British Museum. We possess a male *co-type* from Dharmsala, taken by Mr. Hocking, and also two males from Gurhwal.

TERIAS ÆSIOPEOIDES.

Plate 569, fig. 1, ♂ (*Wet*); 1a, b, ♂ ♀, 1c, d, ♂ ♀ (*Dry*).

Terias Æsiope, Butler, Proc. Zool. Soc. 1883, p. 150. Swinhoe, *l.c.* 1884, p. 508; *id.* 1885, p. 136 *id.* 1886, p. 430; *id.* J. Bombay N. H. S. 1887, p. 275. Forsayeth, Trans. Ent. Soc. 1884, p. 385, pl. 14, fig. 1, 1a, *larva* and *pupa*.

Wet form (fig. 1). Male. Upperside. *Forewing* with the marginal black band similar to that in local Wet *Hecabe*, except that the lower portion has its inner-edge inclined slightly outward. *Hindwing* with the marginal band much narrower. Underside with similar slightly-defined ordinary marks; two cell-marks in forewing.

Expanse, ♂ $1\frac{8}{10}$ inch.

Dry form (figs. 1, a, ♂, 1b, ♀; 1c, d, ♂ ♀). Male. Upperside. *Forewing* with the band medially somewhat narrower than in *Wet* form, its lower portion smaller, and inclined more or less slightly inward. *Hindwing* with the band narrower than in *Wet* form, or slightly interrupted. Underside. Both wings with the markings distinctly defined. *Forewing* with a distinctly formed subapical patch.

Female. Upperside. *Forewing* with the band similar to male, its lower portion slightly broader. *Hindwing* with the band more slender, and slightly interrupted. Underside similar to male.

Expanse, ♂ ♀ $1\frac{4}{10}$ to $1\frac{8}{10}$ inch.

Larva.—"Vermiform in shape, green, with a lateral white line on each side; movements regular."

Pupa.—"Attached by tail and thoracic sling, in horizontal position; wing-cases keeled, head prolonged into a point. Colour at first green, afterwards turning to a brownish-green. Imagines emerged October 14th." (*Forsayeth*).

Habitat.—Western and Central India.

Distribution.—Col. C. Swinhoe records its capture at "Karachi in Western India, in December and January" (*l.c.* 1884, 508), and in "July and August" (J. Bomb. N. H. Soc. 1887, 275); also at "Mhow, Central India, in October" (P. Z. S. 1886, 430). Col. Swinhoe also records it as being "common everywhere in Bombay and the Dekkan, from October to April" (*l.c.* 1885, 136). It was also obtained by him at "Mhow in September and October" (*l.c.* 1883, 150). We possess several males and females of the *Dry* form, taken by Col. Swinhoe, viz.:—

from Karachi, Sept. Nov.; Mhow, April; Ahmednuggur, March, November; Poona, Nov., Dec., January; Bombay, February, Nov., December; Depalpura, November.

Dr. R. W. Forsayeth "found the larva, in Mhow, on a Leguminous tree; the larva being small, and exactly similar in colour to the leaves of the tree, was by no means easy of detection. The butterfly is tolerably common, and generally "flying low over green herbage in gardens and cultivated ground" (*l.c.* 1884, 385).

Of our illustrations on Plate 569, fig. 1 is of a male *Wet* form taken at Karachi, June, 1887; figs. 1, a, b, male and female *Dry* form, taken at Karachi in November; fig. 1, c, of a male *Dry* form, taken at Ahmednuggur, 1d, a female *Dry* form, taken at Poona in January.

TERIAS SWINHOEI.

Plate 569, fig. 2 ♂ (*Wet*); 2a, b, ♂ ♀ (*Dry*); 2c, ♀ (*Extra Dry*).

Terias Swinhoei, Butler, Ann. & Mag. Nat. Hist. 1886, p. 216 (*Dry*).

Wet form (fig. 2 ♂). Smaller than *Æsiopeoides*. Upperside. *Forewing* with the black marginal band comparatively narrower, the apical portion also narrower, less angled at the upper median, its lower portion smaller, and inclined obliquely inward. *Hindwing* with the black band narrow, more regular, and distinctly formed. Underside. Both wings with very slightly-defined ordinary marks. *Forewing* with two cell-marks.

Expanse, ♂ $1\frac{2}{10}$ to $1\frac{4}{10}$ inch.

Dry form (fig. 2a, b ♂ ♀). Upperside. *Forewing* with the black band as in male *Wet* form. *Hindwing* with the band more slender. Underside. Both wings with the ordinary marks more defined. *Forewing* with a pale brown slender subapical patch.

Female. Upperside paler than in male. *Forewing* with the black band similar, its lower portion slightly narrower. *Hindwing* with a slightly-defined slender marginal broken thread, and more distinct tip at end of the veins. Underside as in the male.

Expanse, ♂ $1\frac{4}{10}$ to $1\frac{5}{10}$, ♀ $1\frac{6}{10}$ inch.

Extreme Dry form (fig. 2c, ♀). Male. Upperside. Both wings similar to male of ordinary *Dry* form. Underside with the ordinary marks prominently defined and brownish-edged. *Forewing* with an almost completely-quadrate brown apical patch.

Female. Upperside similar to the same sex, of ordinary *Dry* form, the band on *forewing* having its lower portion slightly more angled at the submedian vein. Underside. Both wings with all the ordinary markings well-defined. *Forewing* with an almost completely-quadrate brown apical patch.

Expanse, ♂ ♀ $1\frac{4}{8}$ inch.

Habitat.—Western and Central India.

Distribution.—The *type* specimens, described by Dr. A. G. Butler, were taken by Col. C. Swinhoe in Bombay and Poona. Colonel Swinhoe possesses a *co-type* of the male *Dry* form from Mhow, taken in Sept., and females taken in Sept. and December; also a male and female from Karachi, both sexes from Ahmednuggur, females taken at Poona in January, February, and December, and a male of the *Wet* form taken at Hoshangabad in October. We possess specimens received from Col. Swinhoe, as follows:—Male *wet* form from Ahmednuggur, male of the *Dry* form from Karachi, taken in March, males from Poona, December; Ahmednuggur, and a female from Mhow, taken in January.

Of our illustrations on Plate 569, fig. 2 is the male *Wet* form, from Hoshangabad, taken in October, 1886; fig. 2a, male *Dry* form, from Poona, 2b, the female, from Mhow, taken in November; 2c, the female of *Extreme Dry* form, from Ahmednuggur.

TERIAS ASPHODELUS.

Plate 569, figs. 3, 3a, ♂ ♀ (*Wet*); 3b, ♂ (*Dry*); 3c, ♀ (*Extra Dry*); 4, 4a, ♂ ♀ (*Dry*).

Terias Asphodelus, Butler, Proc. Zool. Soc. 1883, p. 151, pl. 24, fig. 13, ♂ (*Dry*). Swinhoe, P. Z. S. 1884, p. 508, *id.* 1885, p. 136; *id.* 1886; p 430; *id.* J. Bombay N. H. S. 1887, p. 275.

Terias Narcissus, Butler, *l. c.* p. 151 (*Dry* var.).

Wet form (fig. 3, 3a, ♂ ♀). Male and female. Upperside. *Forewing* with the black band comparatively narrower throughout than in *Wet* form of *Swinhoei*. *Hindwing* with slightly narrower band. Underside with the ordinary markings slightly-defined.

Expanse, ♂ $1\frac{2}{10}$, ♀ $1\frac{4}{10}$ inch.

Dry form (fig. 3b, ♂). Male and female. Upperside. *Forewing* with the band also comparatively narrower than in *Dry* form of *Swinhoei*, its anterior portion more curved, and its lower portion narrow throughout to the posterior angle. *Hindwing* with a very slender marginal line and vein tips, or the tips only indicated. Underside. Both wings with distinctly-defined brown-edged ordinary marks. *Forewing* with two cell-marks and a well-defined brown subapical patch.

Expanse, ♂ $1\frac{2}{10}$ to $1\frac{6}{10}$, ♀ $1\frac{4}{10}$ inch.

Extreme-Dry form (fig. 3c, ♀). Female. Upperside. *Forewing* with the band similar to the *Dry* male. *Hindwing* with the band slightly more defined. Underside. Both wings with similar distinctly-defined brownish-edged ordinary marks. *Forewing* with a brown almost completely-quadrate apical patch.

Expanse, ♀ $1\frac{6}{10}$ inch.

Habitat.—Western and Central India.

Distribution.—The *type* specimens, in the British Museum Collection, were obtained at "Mhow and Depalpur, in December and February" (*l.c.* 1883, 151). Col. C. Swinhoe records it from "Poona, taken in January, February, March, April, and December, and at Mhow in December and April" (*l.c.* 1885, 136; 1886, 430). In Col. Swinhoe's Collection is a male of *wet* form from Mahableshwar, taken in May; also *co-types* of *Dry* form, taken at Mhow, in November and February, also males taken at Karachi in February, Poona in January, Ahmednuggur, June and November, and at Alibagh in June. We possess a female of *Wet* form—(locality not stated); males of the *Dry* form, taken at Poona in December, March, and April; Mhow, December, and from Ahmednuggur. Col. Swinhoe obtained it in "Karachi from November to March" (*l.c.* 1887, 275).

Of our illustrations on Plate 569, fig. 3 is the male *Wet* form from Mahableshwar; 3a, the female of *Wet* form; 3b, male *Dry* form, from Poona, 3c, female of *Extreme Dry* form from Ahmednuggur; figs. 4, 4a, male and female, var. *Narcissus*, from Mhow and Poona.

TERIAS DAVIDSONII.

Plate 570, figs. 1, 1a, ♂ ♀ (*Wet*), 1b, c, ♂ ♀ (*Intermediate*), d, e, ♂ ♀ (*Dry*), f, g, ♂ ♀ (*Extra-Dry*).

Terias Silhetana, Davidson and Aitken, Journ. Bombay Nat. Hist. Soc. 1896, p. 571, pl. 6, fig. 6, 6a, *larva and pupa.* de Nicéville, Journ. As. Soc. Bengal, 1900, p. 252 (*Extra-Dry form*).
Terias Hecabe (pt.), Hampson, J. As. Soc. Beng. 1888, p. 361.

Wet form (fig. 1, 1a). Both sexes larger than the local *Wet* form of *T. Hecabe*. Male. Upperside. *Forewing* with the broad black outer marginal band having the lower end broader and shorter, more inwardly irregular, and its inner-edge curving outward to the posterior angle. *Hindwing* with a broader black outer-marginal band, excavated on its inner edge. Underside. *Forewing* with the ordinary slightly-defined discocellular mark and three cell-marks. *Hindwing* with slightly-defined ordinary markings.

Female. Upperside. *Forewing* with broader outer-marginal band than in male, its lower inner-edge extending obliquely outward; the discocellular mark of the underside distinctly visible. *Hindwing* with a much broader marginal sinuous-edged band than in *Hecabe*. Underside as in male.

Expanse, ♂ 2, ♀ 2¼ inches.

Intermediate form (fig. 1b, c.) Male. Upperside. *Forewing* with the black outer band somewhat narrower than in typical *Wet* form, its lower end shorter, and slightly outwardly-oblique. *Hindwing* with narrow black marginal band.

Underside with more defined ordinary markings. *Forewing* with a brown subapical streak ; two cell-marks *only* visible.

Female. Upperside similar to the *Wet* female, except that the discocellular mark on *forewing* is not visible, and the band on the *hindwing* is much narrower. Underside similar to male, the subapical streak on *forewing* being somewhat broader ; three marks within the cell.

Expanse, ♂ $1\frac{8}{10}$, ♀ 2 inches.

Dry form (fig. 1, d, e). Male. Upperside. *Forewing* with the black outer band somewhat broader apically and narrower posteriorly than in the *Intermediate* form, its lower end smaller and inwardly-oblique. *Hindwing* with the band narrower. Underside. *Forewing* with ordinary marks, an incompletely-formed apical patch, and three cell-marks. *Hindwing* with similar ordinary markings.

Female. Upperside paler yellow than in same sex of *Intermediate* form. *Forewing* with the outer band somewhat broader apically, its lower end smaller. *Hindwing* with a narrow marginal band. Underside. *Forewing* with darker ordinary marks, and completely-formed apical patch. *Hindwing* with darker ordinary marks.

Expanse, ♂ $1\frac{8}{10}$, ♀ 2 inches.

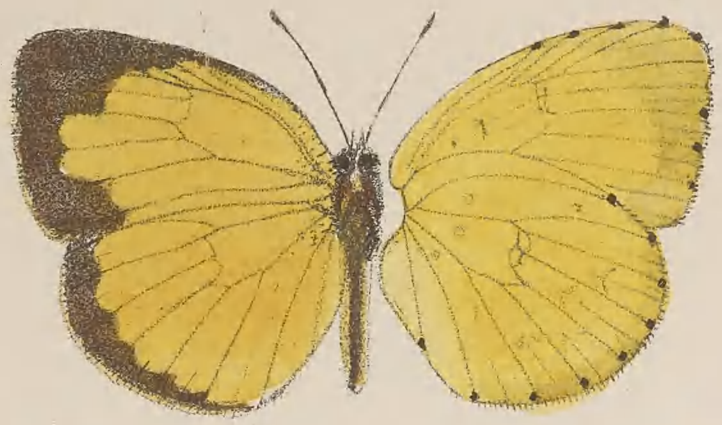
Extreme Dry form (fig. 1, f, g). Male. Upperside. *Forewing* with the outer band similar to male ordinary *Dry* form, its posterior end somewhat narrower. *Hindwing* with a slender marginal line. Underside similar to ordinary *Dry* form ; the apical patch on *forewing* more completely-formed.

Female. Upperside. *Forewing* with the outer band somewhat narrower posteriorly than in ordinary *Dry* form. *Hindwing* with slender, completely-formed outer band. Underside. Both wings similar to the male.

Expanse, ♂ $1\frac{8}{10}$, ♀ 2 inches.

HABITAT.—South India.

LARVA AND PUPA.—Messrs. Davidson & Aitken write, " In describing the larva and pupa of *T. Hecabe* (J. Bombay N. H. S. 1890, p. 360) we said that we had once, in September, got fourteen *black* pupæ all on one dry twig, and so close to each other that they almost touched. We made no attempt at the time to sort the butterflies, when they emerged, from *T. Hecabe*. We have since discovered, however, that these black pupæ are not to be found on the ordinary food plants of *T. Hecabe*, but on *Wagatea spicata* (N. O. Leguminosæ), and that they result from a gregarious larva with a black head. This leaves no doubt that they belong to a distinct species, and, having compared the butterflies which emerged from a large number of both kinds, we find that those produced from the black-headed larva and black pupa had a large red-coloured patch at the apex of forewing beneath, and bear the three dark streaks or spots in the cell in addition to the reniform spot on the discocellular nervules on the underside of the forewing, by which *Silhetana* is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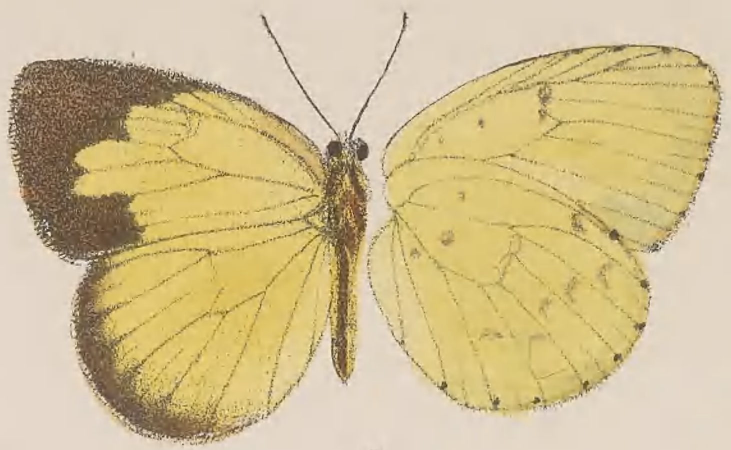
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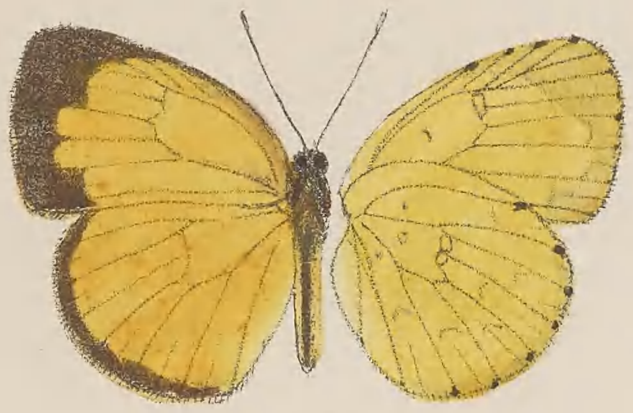
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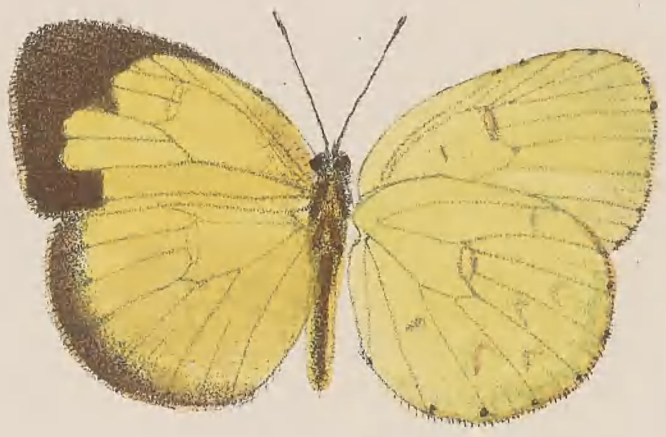
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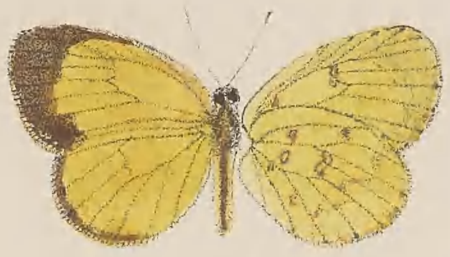
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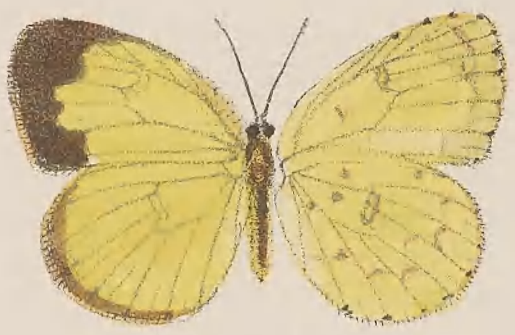
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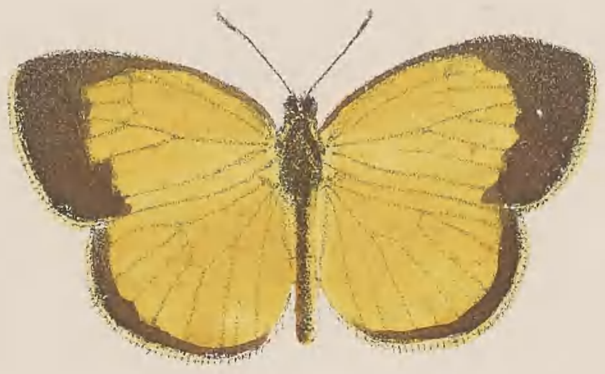
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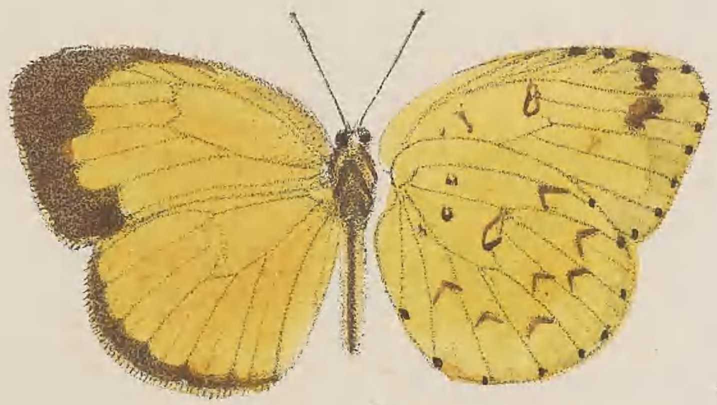
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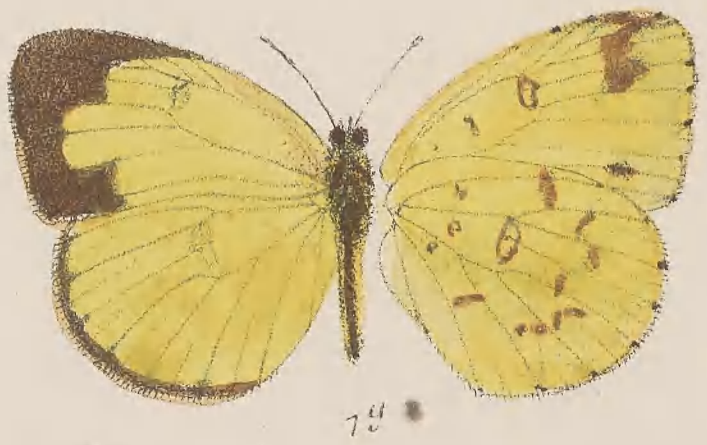
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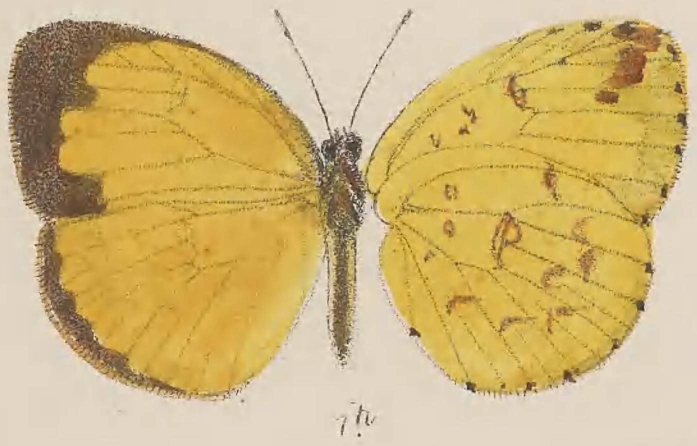
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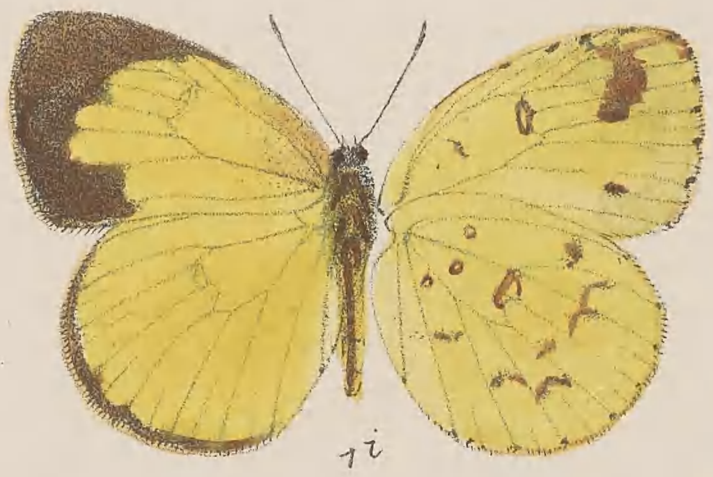
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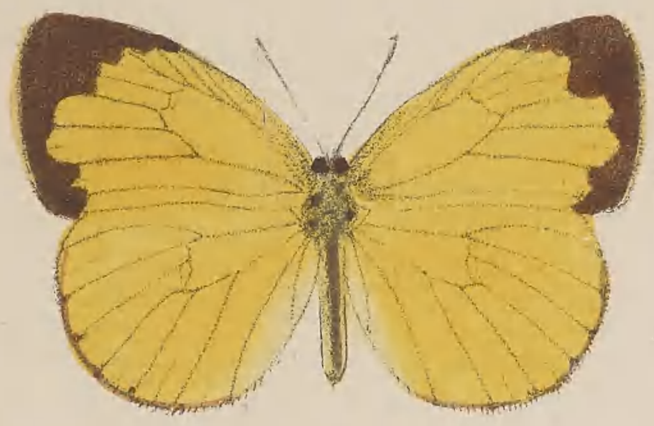
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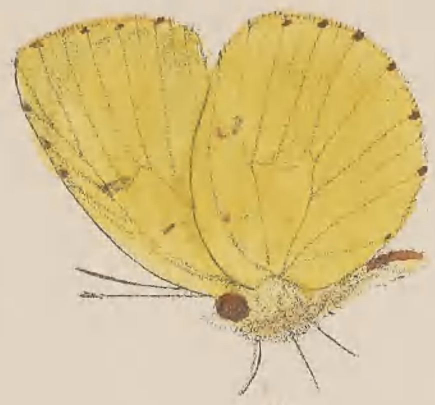
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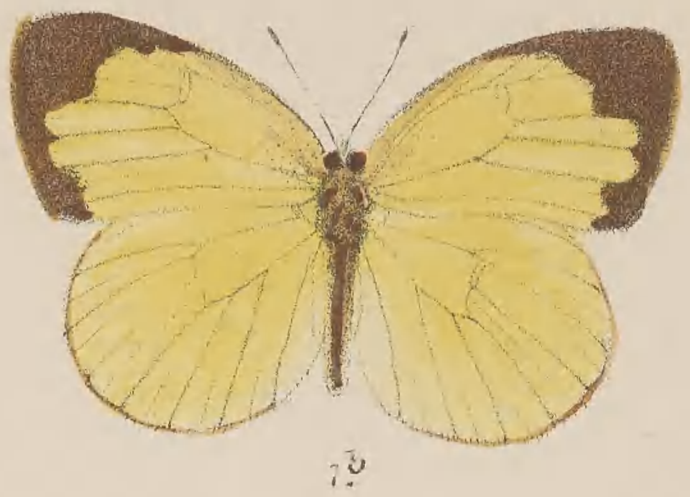
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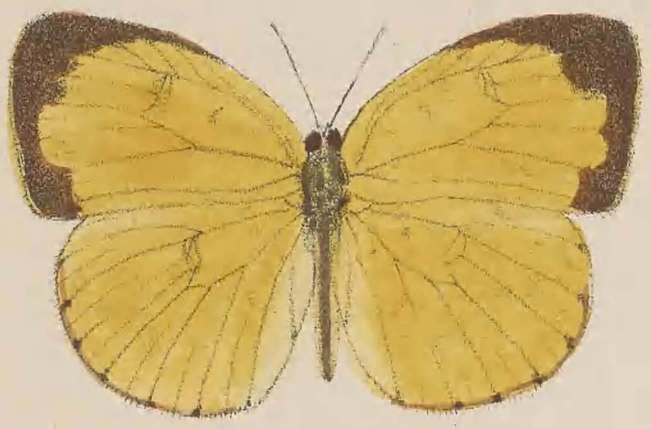
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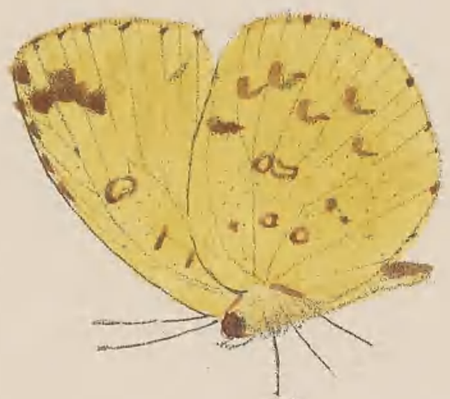
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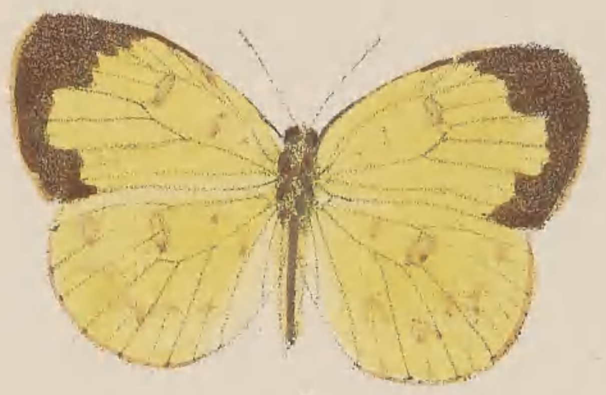
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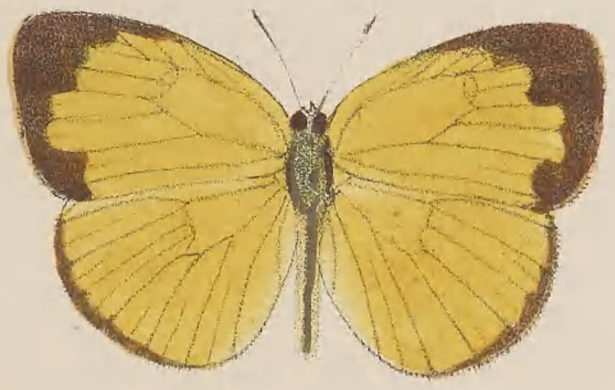
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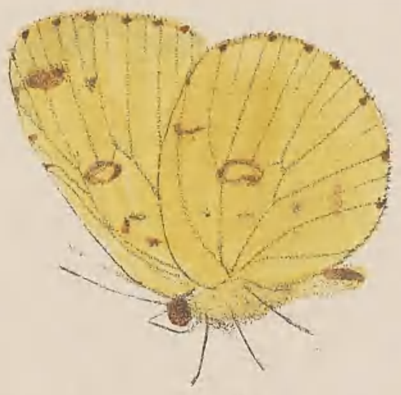
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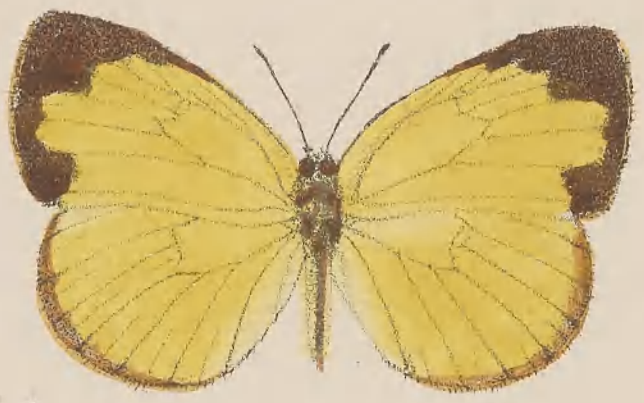
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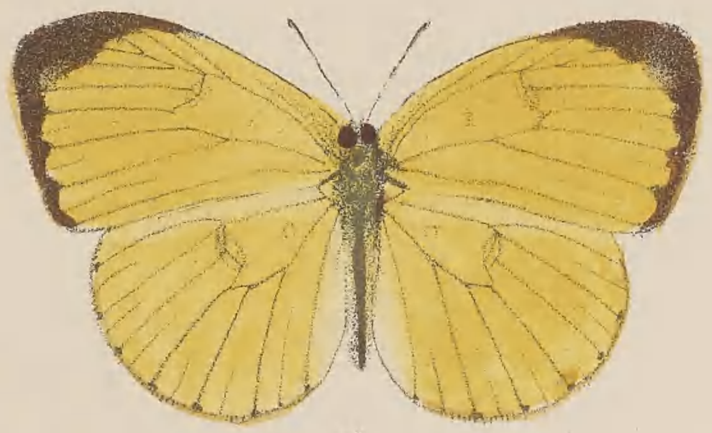
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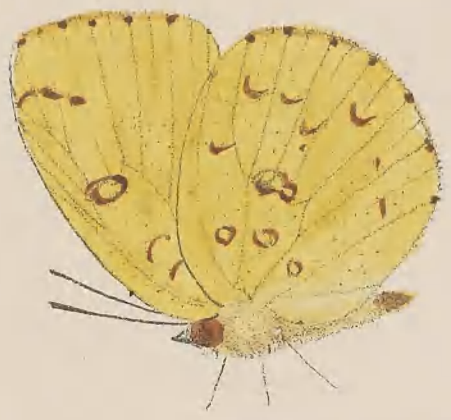
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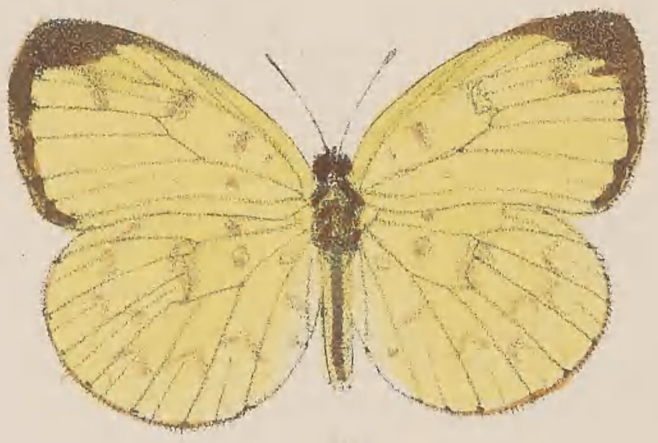
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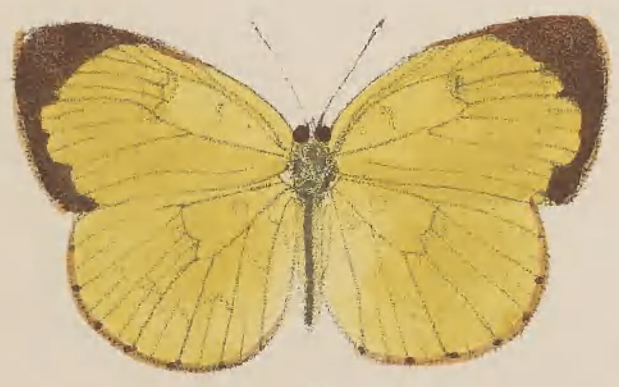
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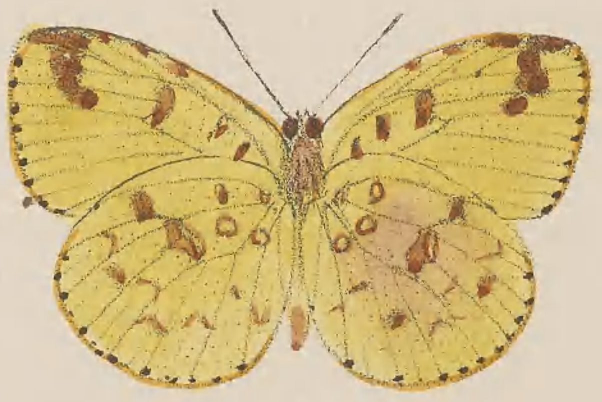
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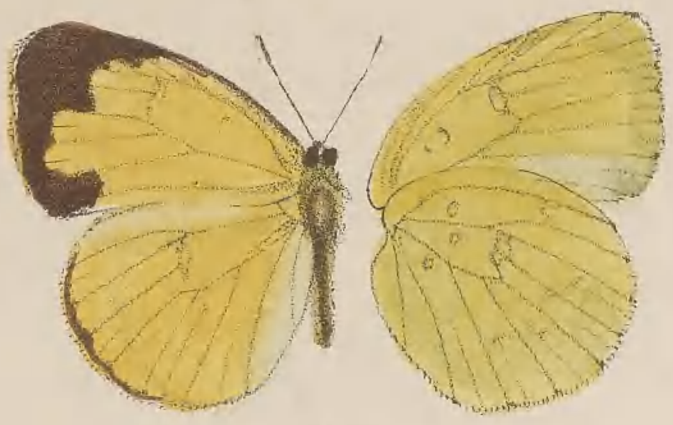

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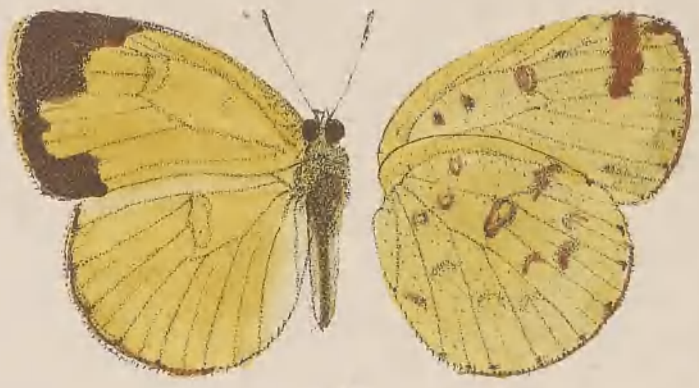

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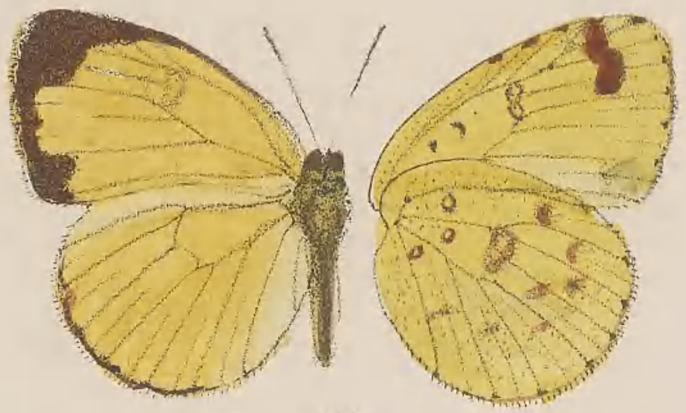

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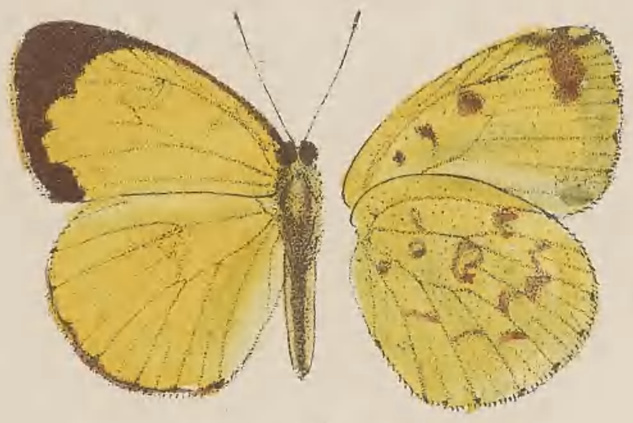

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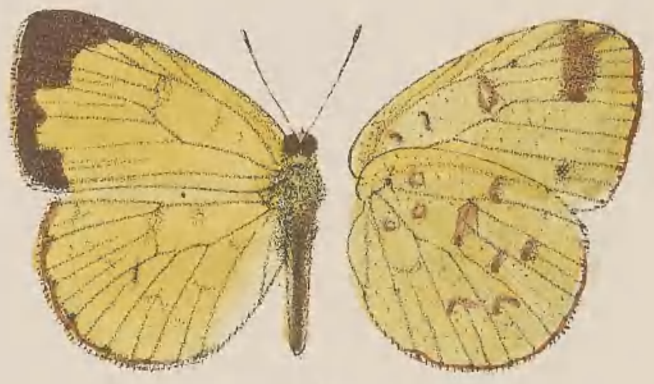

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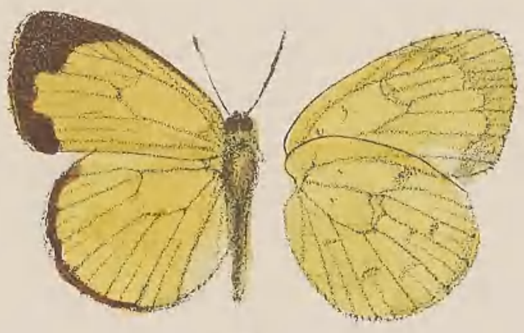

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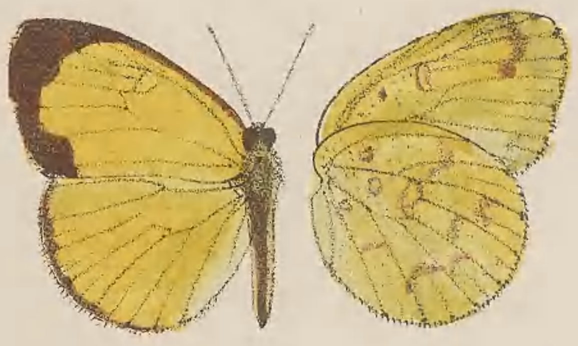

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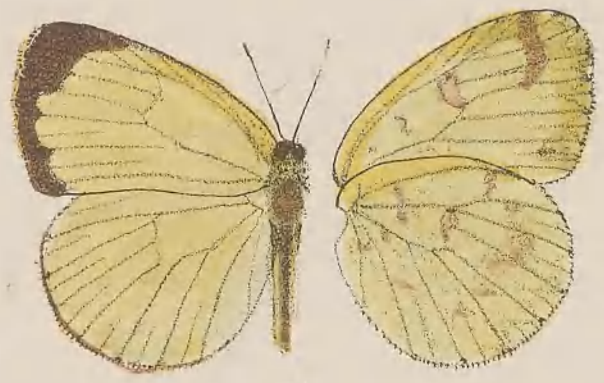

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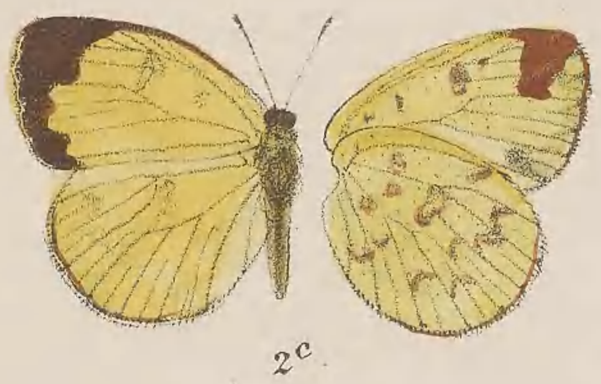

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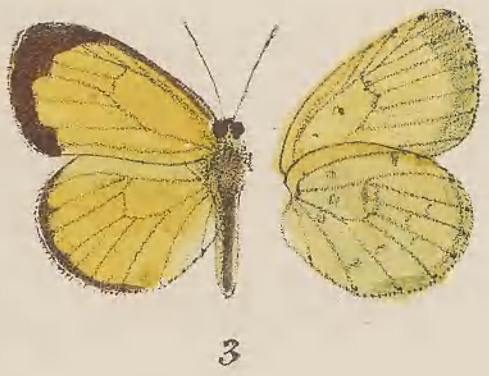

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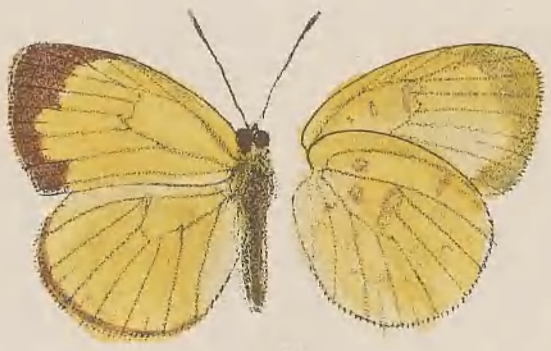

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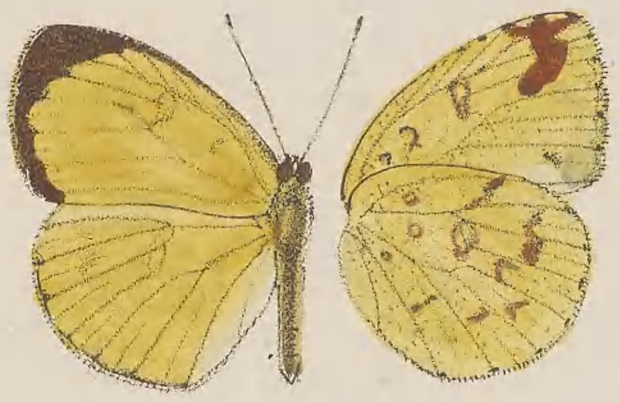

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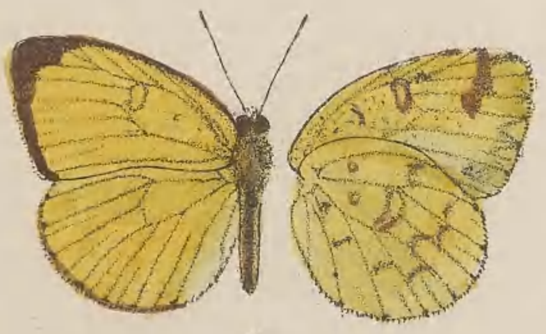

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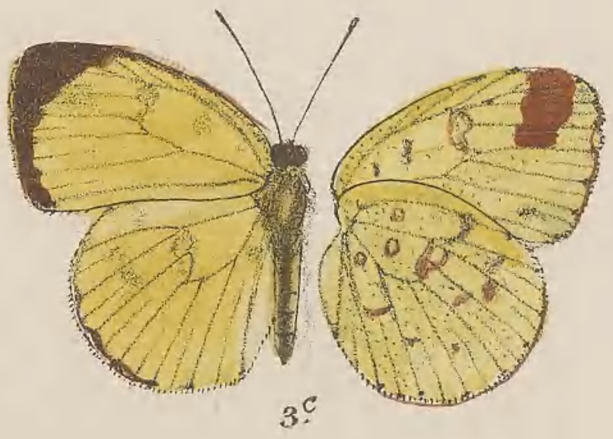

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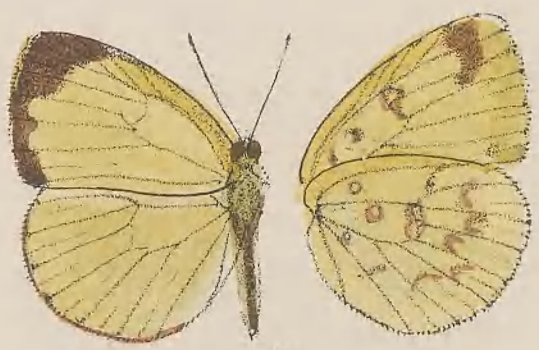

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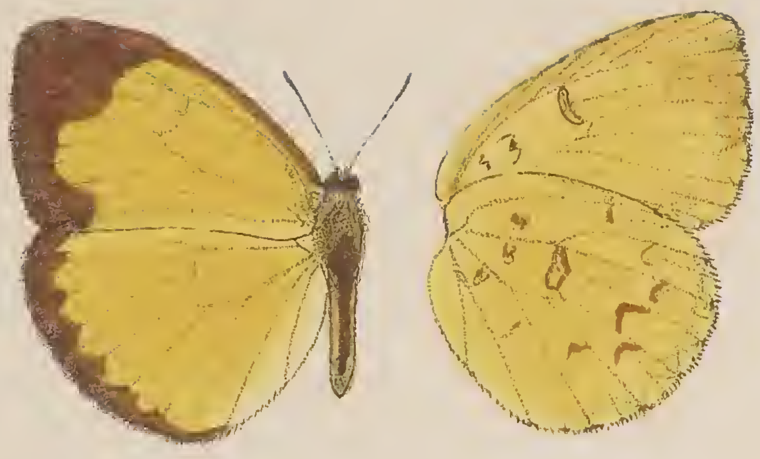

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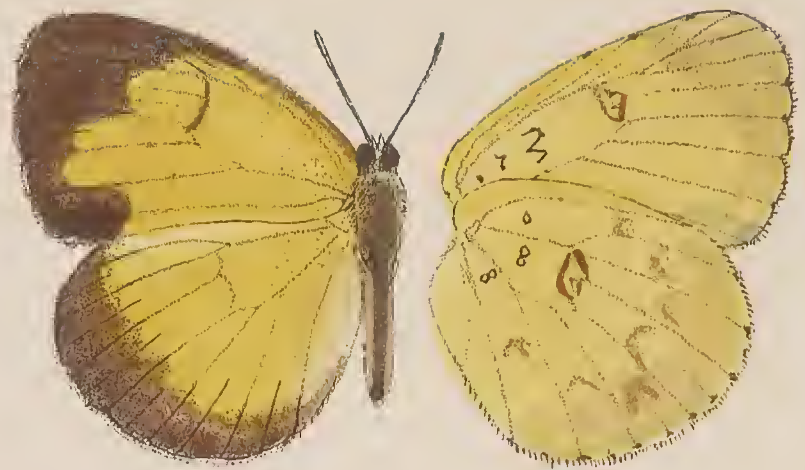

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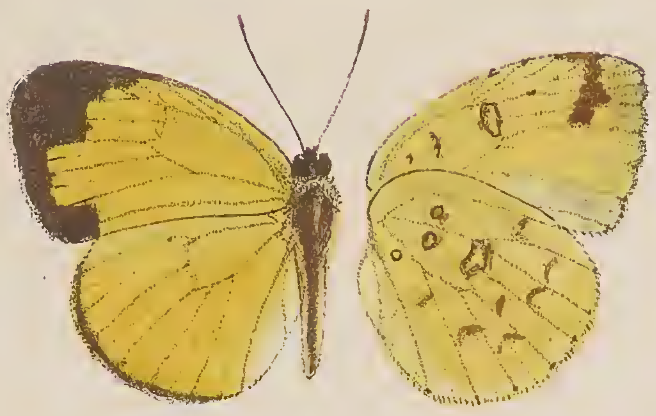

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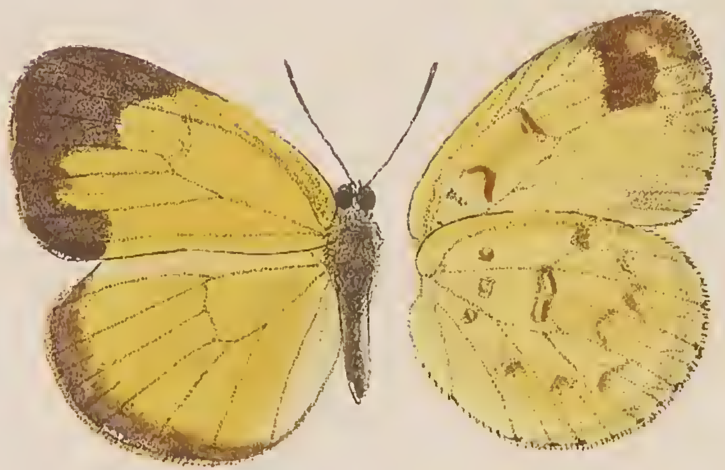

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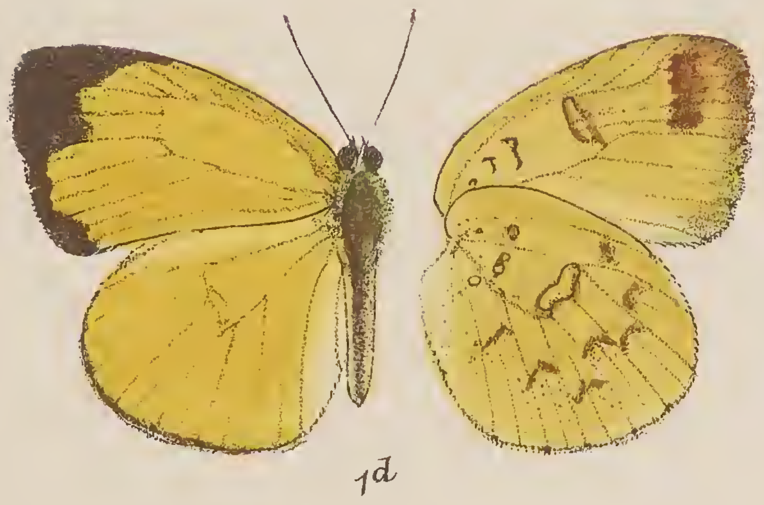

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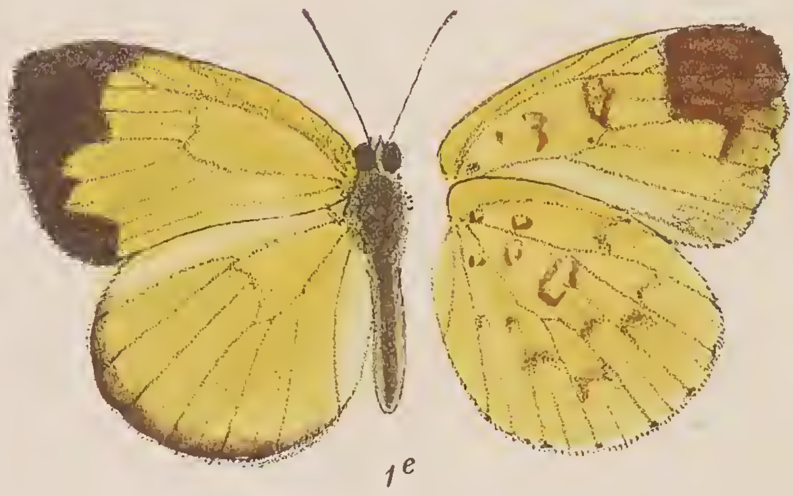

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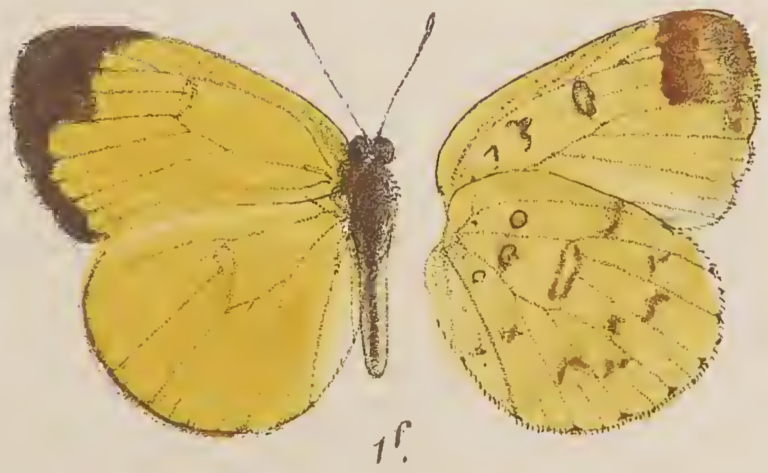

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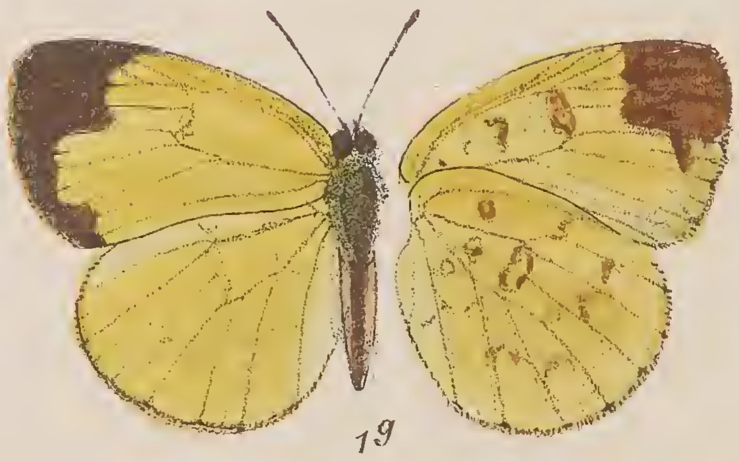

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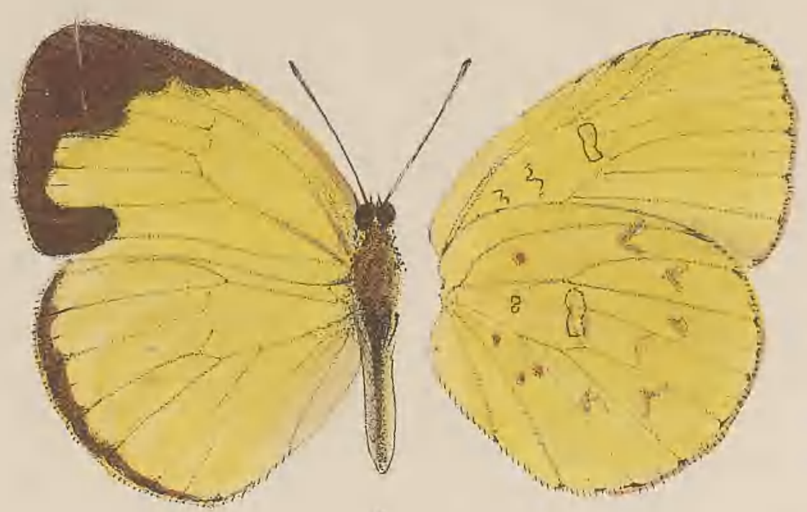
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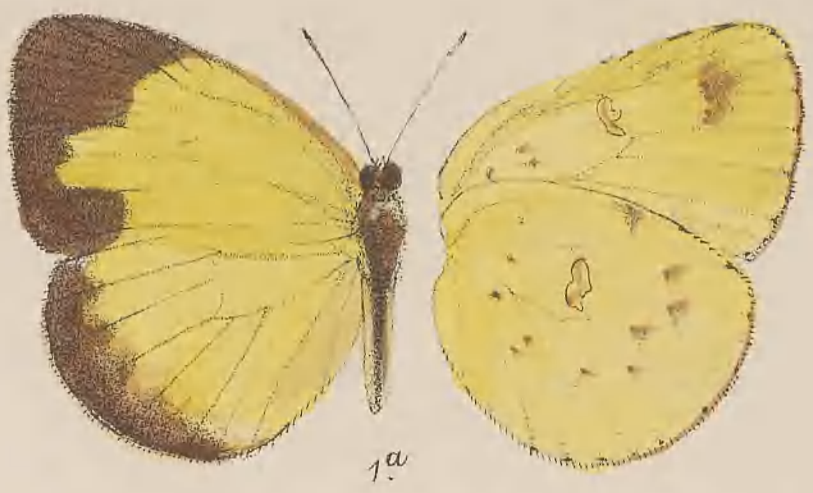
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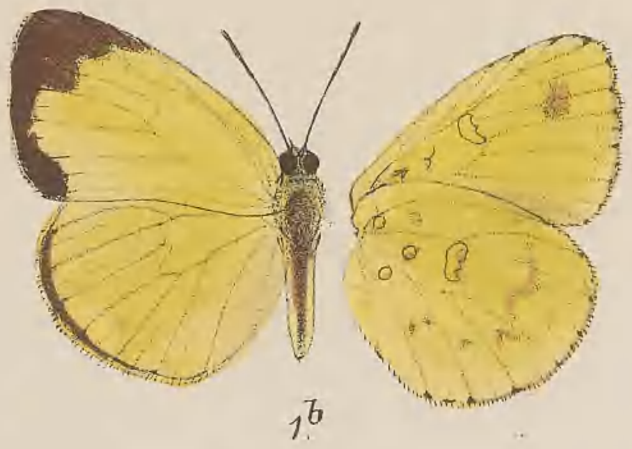
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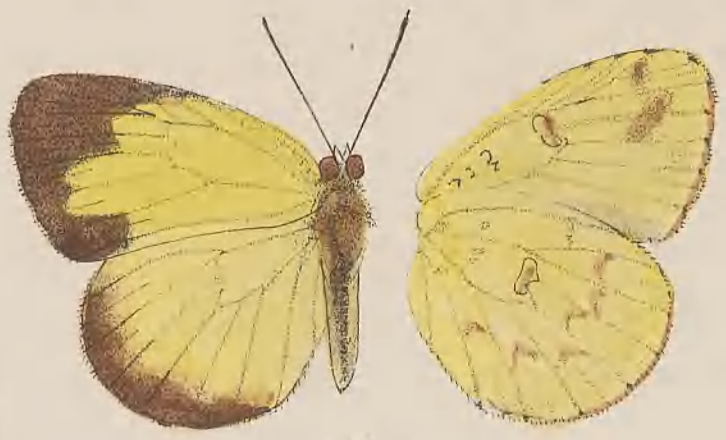
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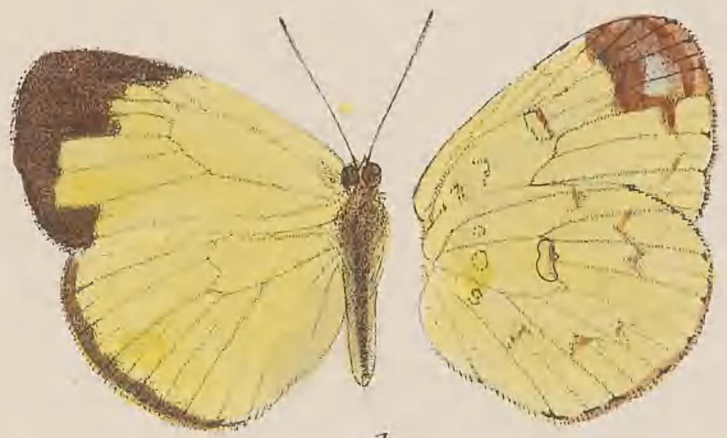
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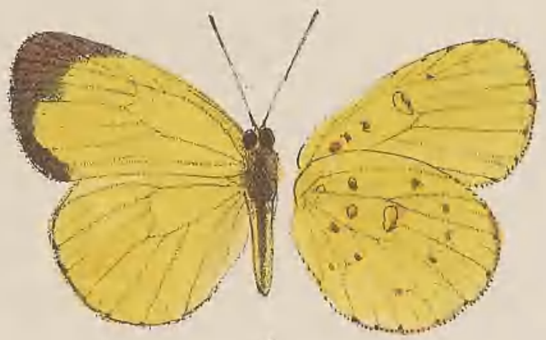
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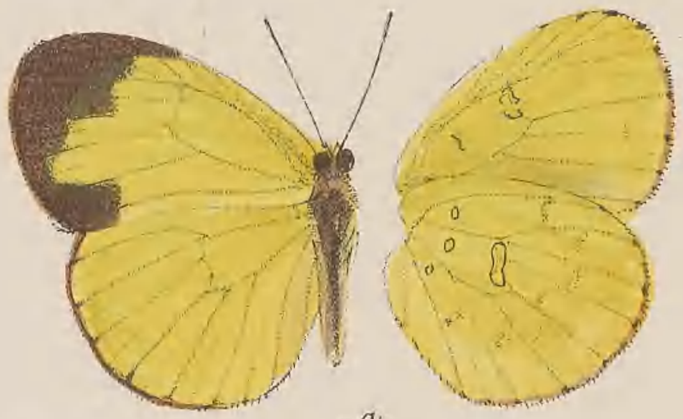
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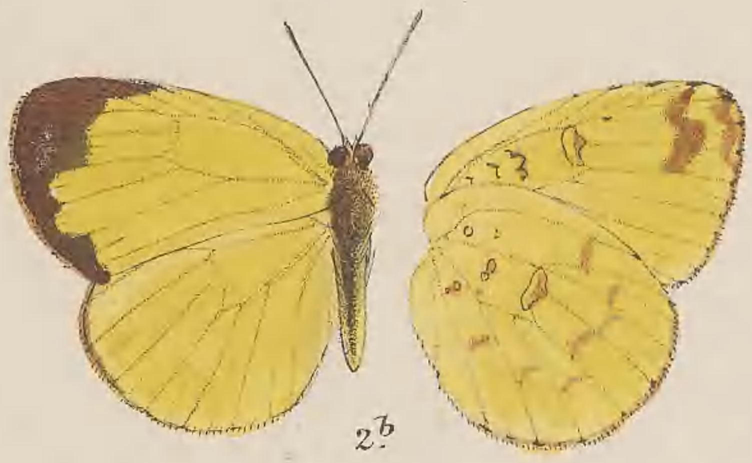
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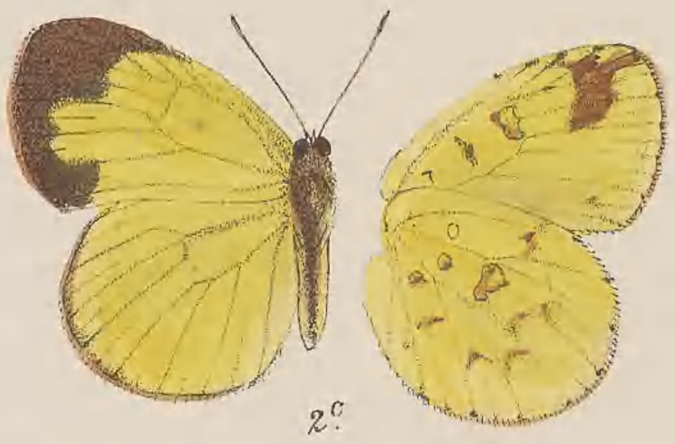
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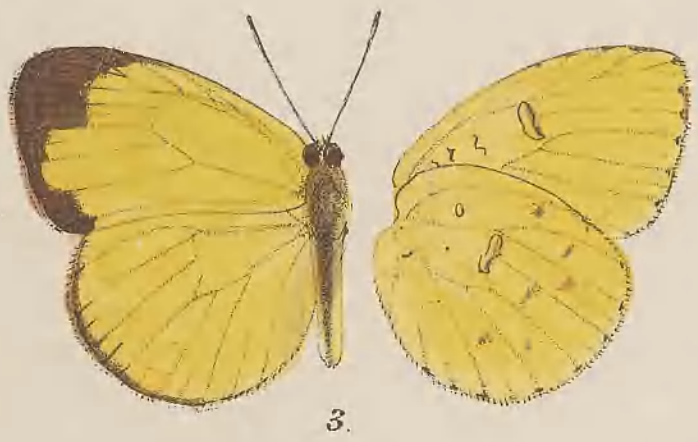
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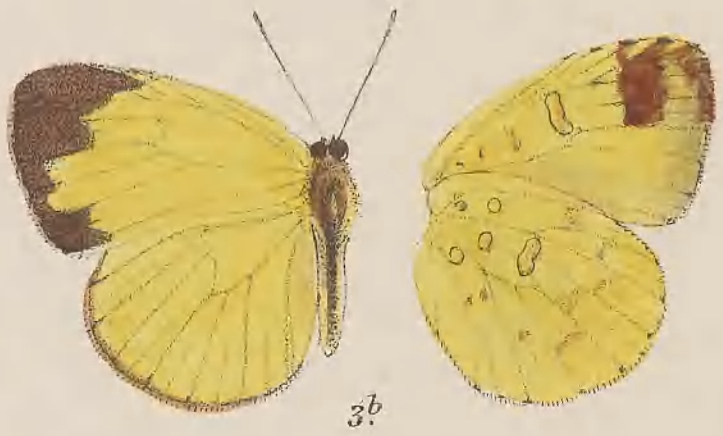
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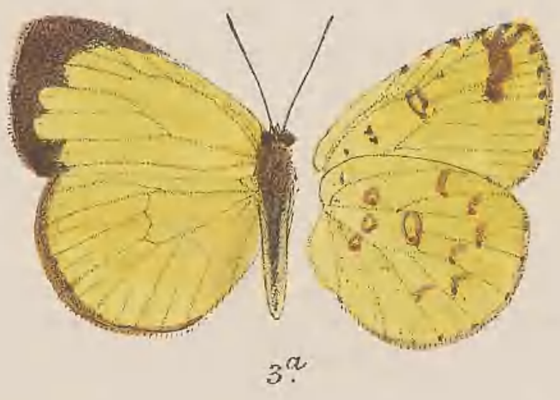
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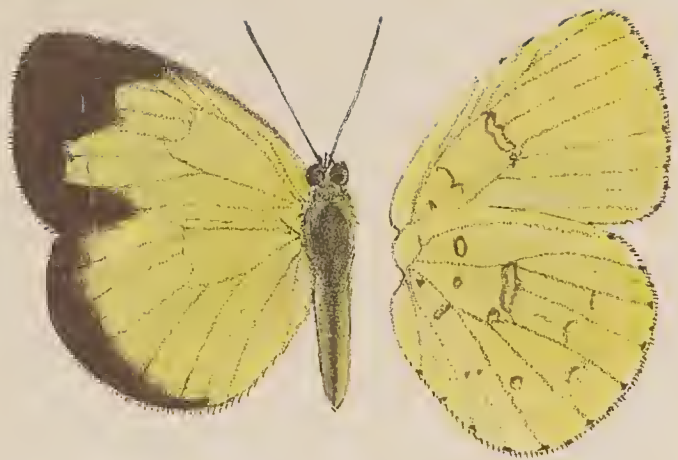

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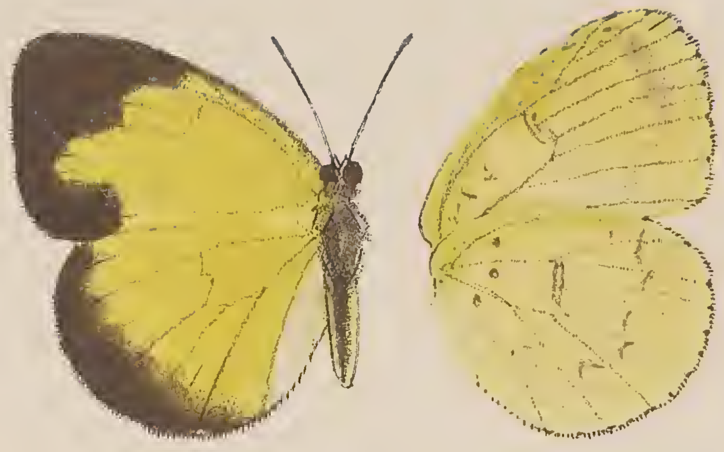

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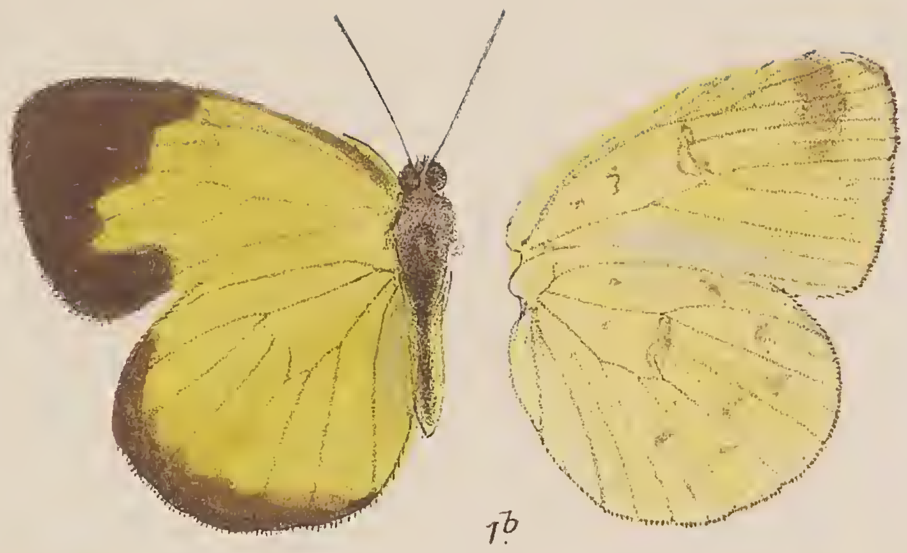

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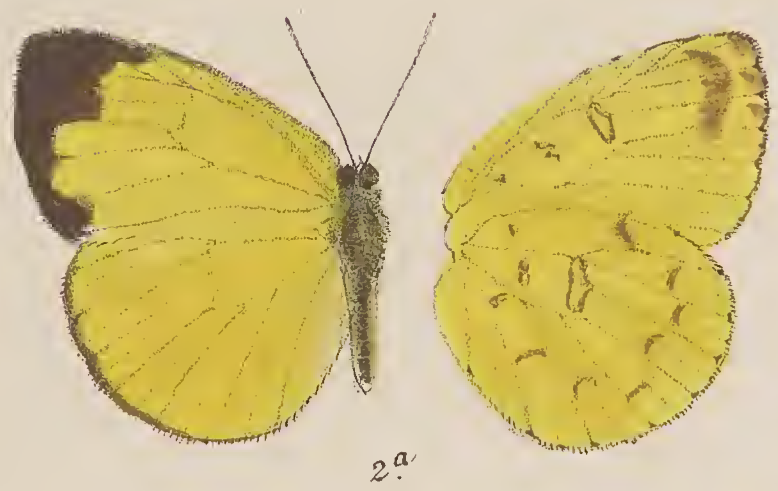

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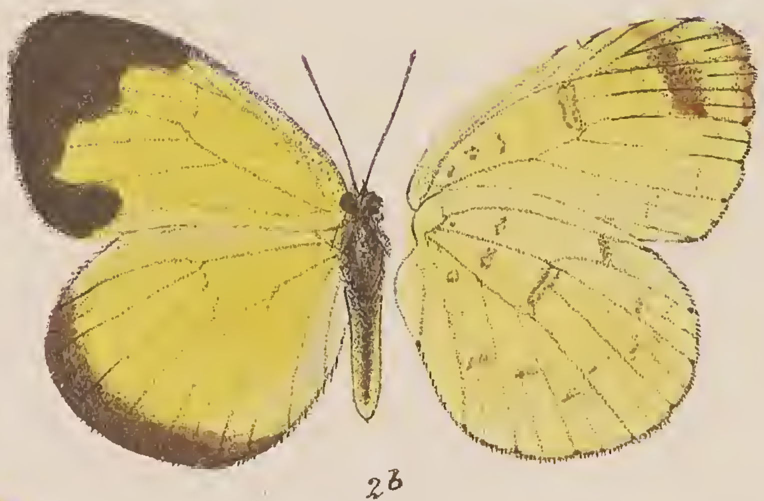

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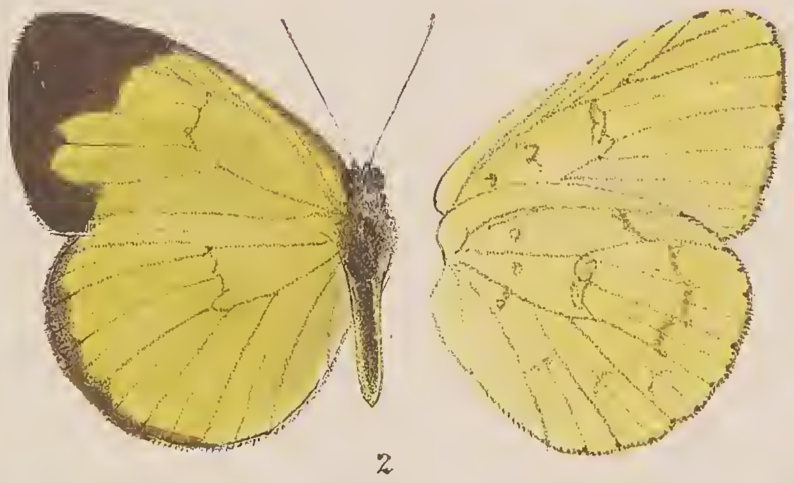

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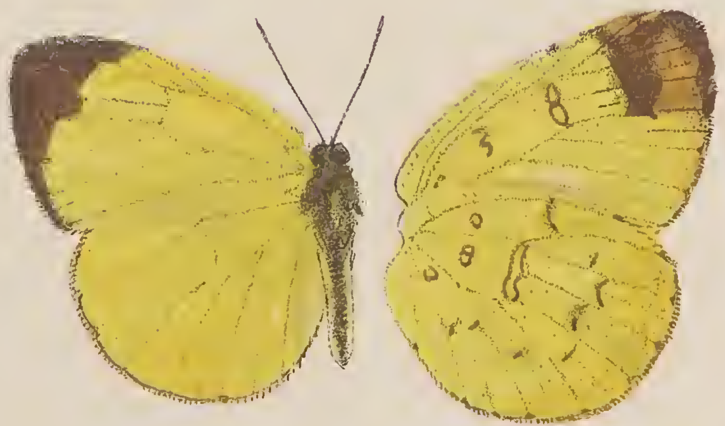

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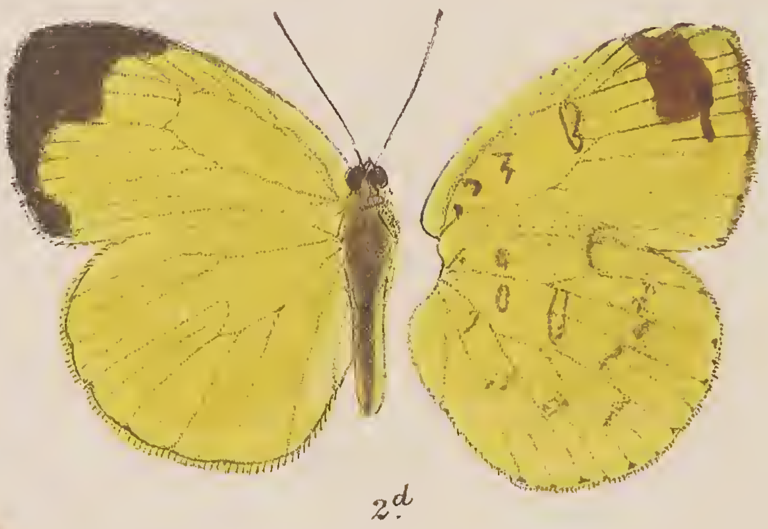

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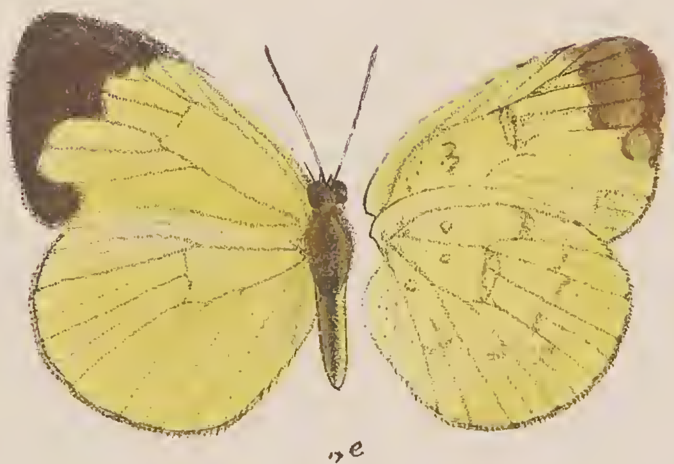

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